

# The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XVII. No. 439

NOVEMBER 26, 1927

Prepaid Annual Subscription:  
United Kingdom, £1.10; Abroad, £1.6.0.

## Contents

	PAGE
EDITORIAL NOTES: Chemical Developments; The Sulphate Position; International Bargaining; I.C.I. and Labour Leaders; Synthetic Rubber Progress .....	477
Institute of Fuel Meeting .....	480
Transporting Chemicals by Road .....	482
Markets for Overseas Chemical Trade .....	484
An Interview with Dr. de Vecchis .....	486
"British Chemical Industry Developments," by Mr. W. J. U. Woolcock .....	487
Chemical Matters in Parliament; "C.A." Queries .....	491
From Week to Week .....	492
References to Current Literature .....	493
Patent Literature .....	494
Weekly Chemical Prices and Market Reports .....	497
Company News; New Chemical Trade Marks; Chemical Trade Inquiries .....	502
Commercial Intelligence; New Companies Registered .....	504

**NOTICES:**—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.

Editorial and General Offices: Bouverie House, 154, Fleet Street, London, E.C.4.

Telegrams: "Allangas, Fleet, London."

Telephone: City 0244

## Chemical Developments

THERE appears to be no end to the possibilities of industrial chemical developments. No sooner has a new dyestuffs industry been established, the fixation of atmospheric nitrogen been converted into an immense industry, and the largest chemical combine in the world been successfully started, than new projects of almost equal importance begin to emerge. The exploitation of the mineral resources of the Dead Sea, already familiar as a theory, may before long become a commercial fact. The beet-sugar industry is already on its way; Dr. de Vecchis, the distinguished author of the desiccation process that bears his name, was in London this week, and was discussing with us some of the chemical engineering problems involved. The recent London exhibitions illustrate the immense advances in commercial motor transport. Perhaps most important of all is the science and technology of fuel, which this week in London engaged for two days the attention of the first annual meeting of the Institute of Fuel.

In the matter of fuel, the possibilities even in the near future are almost without limit, and the difficulty and variety of the problems to be considered correspond. These were admirably summed up in the

address to the Fuel Institute by Sir Alfred Mond. Apart from technical processes of treatment such as those associated with the names of Bergius, Fischer, Patart, and many others, the reorganisation of the coal industry on broad lines is a fundamental reform long overdue. Immediately arising out of coal are the gas and coke oven industries, and closely connected, again, with these are the iron and steel and metallurgical industries generally. Sir Alfred Mond will have done something of national value if he makes all parties realise that the coal industry must be treated on a national basis, since it is the foundation of all our other industries, and that the co-operation of all interests—coalowners, miners, and the Government—is essential to success. Five great steps in the reforms the country is waiting for are the progress of amalgamation, the organisation of coal selling, the establishment of a good understanding with labour, the diminution of local rates, and the provision of cheap capital for development and reorganisation. When these have been successfully tackled, industry will have a reasonable chance, and the chemist and chemical engineer will face opportunities as great as any they have ever enjoyed.

## The Sulphate Position

THE speech by Sir David Milne-Watson, the chairman of the British Sulphate of Ammonia Federation, at the annual meeting last Thursday, followed generally the lines of the report published in THE CHEMICAL AGE of the previous week, with, however, a little additional emphasis on certain points. One of these was the vital question of selling prices. The low figures for nitrogen now ruling and the present excellent demand might encourage a hope that bottom had been touched at last. Neither the annual report nor the chairman's speech supports this view. Unfortunately for producers, especially by-product producers, a further very large increase in the output of synthetic nitrogen is estimated for 1928-29, even if the plans already announced are only partially carried out, and the following year may see an even further increase. Sir D. Milne-Watson's view is that unless production is reduced a difficult position may arise in the near future and a further heavy fall in price may be the result.

Restriction of output is, of course, one way of meeting the situation, though it has not been openly advocated to any great extent. The preferable remedy, if it is practicable, is a corresponding increase in consumption. Here the prospect is not without encouragement. The research and experiment now in progress have demonstrated that the application to grass land of nitrogenous artificial fertilisers in enor-

mously increased quantities is quite an economic proposition. Not only is the dream of the old economists come true—that the chemist can make two blades of grass grow where only one grew before—but it is now known that, whether for dairy purposes or for stock raising, the nutriment capacity of the crop can be effectively increased. The farmer or stock breeder, however, needs to be convinced, and the Federation's method is to convince him by personal advisory services as well as by general propaganda. When it is realised that a given area of grassland, when intensively treated with the right class of fertiliser, can support double the number of beasts, or produce animals of a much heavier type, or yield larger quantities and better qualities of butter and cheese, the demand for these fertilisers will quickly increase; British agriculture will benefit and nitrogen producers will share in the benefits.

Some of the figures quoted by the Chairman are significant. Out of the present world production of pure nitrogen, synthetic production represents 56 per cent., by-product production 28 per cent., and Chile nitrate 16 per cent. Compared with the previous year, by-product production remains about the same, but synthetic production has advanced 10 per cent. at the expense of Chile nitrate. As regards consumption, there was a falling off of nearly 50,000 tons in Chile nitrate, while the consumption of other forms increased 103,000 tons, no less than 70 per cent. of this increase being due to Germany.

The relative claims of natural and synthetic nitrogen are rather outside our field. In most industries, especially old conservative industries like agriculture, there is for a time a preference for the natural over the artificial article, but usually the synthetic article comes into general use, as its chemical properties are exactly known and can be relied on. But where increased quantities of any fertiliser are applied, some corrective measures have often to be taken to maintain the proper balance, and just now there is a vigorous demand for lime. This goes back to an old rule-of-thumb theory, which assumed that prosperity or failure in farming was decided largely by the use or neglect of adequate liming. Science appears to have come decidedly in this matter to the support of the old empirical view, and the value of lime is coming into increased recognition on all sides.

### International Bargaining

CONSIDERING how long it has been generally known that negotiations are in progress between Imperial Chemical Industries and the I.G. Farbenindustrie A.-G., it is no small tribute to the discretion of the various negotiators that nothing has leaked out with respect to the bases of discussion. The financial experts of the daily Press have poured out enormous volumes of talk on the subject, but it is clear that they are as much in the dark as their readers. Of late, however, old facts have begun to appear in a clearer light, and new facts have emerged, and it begins to be possible to guess more or less correctly some of the weapons which are being used in what are probably the most complicated and momentous commercial negotiations which have ever occurred. It seems

fairly certain that the I.G.'s strongest card is its work on the production of oil from coal. It is still doubtful how near the I.G.-Bergius process is to commercial success, but sooner or later this point will be reached, and will put in the hands of German industry a weapon of tremendous power. From both the economic and the strategic points of view, it is absolutely essential that the production of oil from coal in Great Britain should be effected as soon as possible. There is every reason, therefore, why the I.G. should keep the importance of their process in the forefront of the discussions.

It is fortunate that the British negotiators are in a position to make two very effective counter-moves. The first can, with a little imagination, be read between the lines of a recent announcement, that at the next meeting of the board of the I.G., which will take place in February, there will be discussed the question of the manner in which the capital requirements of the organisation are to be fulfilled. There have been hints in the German Press that the question of the provision of capital for the I.G. is bound up, to a greater or less extent, with international negotiations. It is possible that here is the crux of the whole matter. For the proper development of its schemes, the I.G. will probably require enormous amounts of capital. To consider one point alone, it is fairly certain that coal liquefaction plants, in order to be economical, will have to be conceived on a scale hitherto unknown, even in the greatest industrial installations. The realisation of this plan alone will, therefore, involve the I.G. in heavy commitments. Money is still "tight" in Germany. In this country, on the other hand, there seems to be plenty of capital available. It would not, perhaps, be too remote from the truth to suggest that this is a point which both sides will keep in view.

The British negotiators have also another useful lever. Although no official announcement has been made, it is thought that, details excepted, the award of the Dead Sea concession has been settled fairly definitely. It has recently been suggested that the I.G., having quarrelled with the German Kali-Syndicat, would be very interested in an alternative source of potash. It is very doubtful if the Germans would really cut off their noses in order to spite their faces in this way. On the other hand, they must face the fact that the exploitation of the Dead Sea (whoever the concessionaires may be) will certainly threaten the German potash industry, while at the same time strengthening the hands of those who have hitherto been weakest in this respect.

The negotiations have dragged on for a long time. If the above speculations are correct, it seems likely that their conclusion may not be very far off, and that, in their capacity for mobilising capital on any desired scale, the British negotiators hold the trump card.

### I.C.I. and Labour Leaders

MR. J. R. CLYNES, M.P., at the close of the important conference between Imperial Chemical Industries, Ltd., and the National Union of General and Municipal Workers, which took place at Nobel House on Tuesday, made one of the most hopeful statements it has been our pleasure to report for some time. He gave an

assurance on behalf of his colleagues that it was the intention of his union to co-operate in every possible way in the administration of the new Labour policy, recently announced by the company. When Imperial Chemical Industries was formed, we ventured to express the view that, among other national services, it might set a new standard and example to the whole country in the right handling of labour. It has already done so, and a body of responsible Labour leaders have already made a definite response. This is the spirit on both sides that is essential to the industrial recovery of this country.

At this conference the National Union of General and Municipal Workers was represented by Mr. J. R. Clynes, M.P., Mr. Will Thorne, M.P., Mr. Charles Dukes, Mr. H. Lynas, and Mr. T. Williamson; the company by Sir Alfred Mond, M.P. (chairman), Sir Harry McGowan (president), Mr. Henry Mond, Colonel G. P. Pollitt, and Mr. J. Rogers (directors), and Mr. R. Lloyd Roberts (chief labour officer). Sir Alfred Mond expressed his pleasure at meeting representatives of the union, and made a general statement on the labour policy of the company. A discussion followed on the functions of the works councils, and a number of questions were asked and answered on various points in the labour programme announced, particularly relating to workers' shareholding and staff grade. The representatives of the union expressed themselves as gratified to find that the new magazine which it was proposed to issue would contain no controversial matter whatsoever. After Mr. Henry Mond and Mr. Lloyd Roberts had explained the new policy in detail, Mr. Clynes, on behalf of his colleagues, made the statement already mentioned—that it was the intention of his union to co-operate in every possible way in the administration of the new policy. The conference marks an excellent start.

### Synthetic Rubber Progress

THE steady stream of information that flows from Germany concerning chemical developments there now brings the news that a practical process of manufacturing synthetic rubber has been invented. It is stated that the experimental stages have been passed; there is even a claim that the cost of production has been lowered to the point of effective commercial competition with natural rubber. About the ability of chemists ultimately to produce synthetic rubber there need be no doubt, but two essential problems remain. The first is the quality of the product, and especially its wearing power and its applicability to the uses for which rubber is required. The second is the cost of production. Any purely chemical difficulty could no doubt in time be overcome; the chemist who once produces synthetic rubber will ultimately find a way to produce the right qualities. The cost of production is a commercial problem, and so far there is little, if any, direct evidence that it is on the way to solution. Experiments are no doubt in progress, and experiments almost invariably mean new discoveries. But the conversion of laboratory successes into successful commercial propositions is usually slow, and there seems no immediate prospect of the appearance of synthetic rubber on the market.

It is worth noting that these reports of chemical advances and rumours of European chemical combines emanate mainly from Germany. There is nothing very bad in a vigorous publicity campaign intended to let the world know what Germany is doing. Our own information is that Germany is doing very good work in the chemical field; that business, in fact, is increasing at a rate that taxes the capital resources available. Germany has been borrowing of late from Great Britain and the United States, and the fact that she needs foreign capital to finance her newer industries may be kept in mind when reports are circulated of exceptional advances.

### Book Received

DIE VISKOSKUNSTSEIDEFABRIK: IHRE MASCHINEN UND APPARATE  
By Ob.-Ing Ed. Wurtz, Leipzig: Otto Spamer. Pp. 110.  
Rm. 8.

### The Calendar

Nov. 28	University of Birmingham Chemical Society: Paper by D. A. Howes.	University, Birmingham.
28 & Dec. 5	Royal Society of Arts (Cantor Lectures): "Alloy Steels, their Manufacture, Properties and Uses." Professor H. C. H. Carpenter. 8 p.m.	John Street, Adelphi, London.
Nov. 29 & Dec. 6, 13	Royal Institution of Great Britain: "A Year's Work in X-Ray Crystal Analysis." Sir William Bragg. 5.15 p.m.	21, Albemarle Street, London.
Nov. 29	Institute of Metals (Birmingham Section): "Corrosion." Dr. G. D. Bengough. 7 p.m.	Engineers' Club, Waterloo Street, Birmingham.
29	Manchester Athenæum Textile Society: Debate with Athenæum Debating Society on "Combines and Trusts—Are They of Benefit to the Trade or the Public?" 7 p.m.	Athenæum, Manchester.
30	Shaw Textile Guild: "Artificial Silk." G. H. Thompson. 7.30 p.m.	Town Hall, Shaw.
30	Royal Society of Arts: "Marcelin Berthelot and Synthetic Chemistry." Professor H. E. Armstrong. 8 p.m.	John Street, Adelphi, London.
Dec. 1	Chemical Society. 8 p.m.	Burlington House, Piccadilly, London.
2	Society of Chemical Industry (Manchester Section): "Coal and Co-partnership." J. A. Bowie.	Engineers' Club, 17, Albert Square, Manchester.
3	Institute of Metals (Birmingham Section): Annual Dinner.	Queen's Hotel, Birmingham.
3	Oil and Colour Chemists' Association (Manchester Section): Third Annual Dinner. 7 p.m.	Grand Hotel, Manchester.
5	Society of Chemical Industry (London Section): "Automatic Analysis of Liquids and its Application to Control of Water Softening Plants." Dr. H. S. Hatfield. 8 p.m.	Burlington House, Piccadilly, London.
5	Institution of the Rubber Industry (London Section): "Efficiency Methods in the Rubber Industry." W. W. Hamill.	Engineers' Club, Coventry Street, London.
5	University of Birmingham Chemical Society: "Recent Advances in Stereochemistry." Professor T. M. Lowry.	University, Birmingham.
6	Institute of Chemistry and Society of Chemical Industry (Edinburgh Sections): "Electro-Synthesis." Professor Sir James Walker. 7.30 p.m.	36, York Place, Edinburgh.
6	Institute of Metals (N.E. Coast Section): "Hot Extrusion Process." J. E. Newson. 7.30 p.m.	Armstrong College, Newcastle-on-Tyne.
7	Society of Public Analysts. 8 p.m.	Burlington House, Piccadilly, London.



## First Annual Meeting of the Institute of Fuel

### Discussions on the Bergius Process, Liquid Fuel, Etc.

*On Wednesday and Thursday of this week the Institute of Fuel held a meeting at the hall of the Institution of Electrical Engineers, London. Sir Alfred Mond, president of the Institute, delivered his presidential address, which, together with a number of papers, is summarised below.*

SIR ALFRED MOND, on Wednesday, addressing the first annual meeting of the Institute of Fuel, as its president, stated that he was glad to observe the great success which the now merged Institute had achieved during the first year of its existence. Thanks to the efforts of Sir William Larke and Mr. P. C. Pope, the amalgamation of the two previous Institutions dealing with fuel economy had been successfully achieved. The Institute already had a considerable number of collective members, and it was of the utmost importance that the list of collective membership should be considerably extended. In the company of which he was chairman, every constituent firm of any magnitude was already a collective member, and he could, therefore, appeal with force to other industrial concerns to take the same course.

He was informed that the council of the Institute was engaged in drawing up regulations for admission of ordinary members to a new class of fellowship. It was proposed that election to a fellowship should be a real distinction, and it was hoped that the existence of such a status would be a stimulus to those engaged in the fuel industry to raise the standard as high as possible. The Institute had a most important advisory side to which firms, large or small, could apply for expert technical advice on any problem relating to fuel economy.

#### The Fuel and Power Committee

The Government were fully alive to the importance of the problems of fuel technology, as had been proved by the establishment of the National Fuel and Power Committee, of which he was chairman. The Committee had been in existence for a little over a year, and had already completed a preliminary survey of some of the major problems. While he could not indicate specifically any preliminary report which might be made, it was thought that he could fairly indicate a number of matters which would be tackled in the immediate future. Among the problems of urgency and importance, on which immediate action might be expected, were the coke oven industry and the gas industry. The coke oven industry was so intimately linked up with the national iron and steel industries that any reforms which came from various sources, both at home and abroad, were of great importance. It was quite impossible for any one of the great manufacturing countries to make a large step forward in industrial efficiency without this being immediately reflected in similar industries of its competitors. This country, which was probably the greatest exchange market of the world, had both given to the world and received from the world at large an extraordinary number of valuable ideas, and in connection with the improvements which would undoubtedly take place in the not distant future in the coke oven industry, they might expect substantial contributions from foreign practice.

The other branch of fuel industry in which substantial reforms had been long delayed was the gas industry. Some of the gas undertakings of this country were, at their inception, treated by the law as though they were loitering with intent to commit a felony, and as though their ultimate financial prosperity would have been a loss to the community at large and not a gain. Many gas undertakings were still hampered by the most extraordinary and out-of-date restrictions as regards quality, output, and conditions of service. The importance of reasonable legislation, revising restrictions, could not be over-emphasised.

#### A Coal-Ash-Reducing Process

There were two basic industries in desperate straits, namely, coal, and iron and steel, which could gain immensely by falling into line with modern economic tendencies and modern fuel technology practice. Reorganisation of the coal industry on broad lines was long overdue. By a continuation of the process of amalgamation and by the more general adoption of the principles underlying district coal-selling organisations, a great

deal could be achieved. There had been, during the past year, one extremely interesting development in the coal industry which, though still in the experimental stage, yet in the course of time might easily have the most far-reaching effects. Although British coal ranked high in quality, the large proportion of ash frequently contained in it was a most serious drawback. The process to which he alluded would, it was hoped, be capable of dealing with many classes of coal, and reducing their ash below 2 per cent. A commercial plant was already nearing completion, and would soon begin practical operations.

#### Mr. Frank Hodges as Chairman of Council

Sir Alfred Mond announced that in succession to Sir William J. Larke, the council of the Institute had been fortunate enough to secure Mr. Frank Hodges as chairman.

"The Conversion of Coal into Oil by the Bergius Method" was discussed on Thursday by J. I. Graham and D. G. Skinner, of the Mining Research Laboratory, Birmingham University. They stated that, by the Bergius process, at the present rate of consumption the liquid fuel needs of this country could be met by the treatment of approximately 15 million tons of raw coal per annum—i.e., about 6 per cent. of the total amount raised. Obviously, therefore, hydrogenation could not be a panacea for the ills of the mining industry even should the process be economically feasible.

#### British Work on the Bergius Process

The Bergius process consisted essentially in subjecting coal to heat treatment in a hydrogen-containing atmosphere at high pressure. The best results would seem to be obtained by subjecting the coal to treatment at temperatures between 400° and 450° C., and pressure of over 100 atmospheres, in the presence of a distribution medium. Oil produced by a previous hydrogenation was used by Bergius for this purpose. For the liquefaction of coal to be a commercial proposition, continuous working was essential. Since 1922, investigation of the process as applied to British coals had proceeded without break in the Mining Research Laboratory at the University of Birmingham. These experiments, since 1924, had been financed by the British Colliery Owners' Research Association, and had, in the main, confirmed Bergius's results. Tabulated results of the hydrogenation of about thirty British coals had shown clearly that, under the same working conditions, some coals were much more amenable than others to the action of hydrogen under high pressure.

The solid residue left after hydrogenation amounted, on the average, to about 20 per cent. of the original coal. The commercial utilisation of that product seemed difficult, except in the form of powdered fuel or in low-grade producer gas practice. Petrol could be obtained in amount up to 25 gallons per ton of coal treated. The value of the heavier oil was not, however, so assured, although Bergius claimed that good lubricating oils had been obtained from this portion of the products.

It would appear that the value of the products will mainly depend upon the prevailing price of petrol and of fuel oil. It was certain that the prime necessity for the commercial success of the process was cheap hydrogen. Bergius realised this fact, and had developed a new process in which the gaseous products were utilised to this end. It appeared from the researches carried out in the Mining Research Laboratory, that those coals falling into the baruminous division of the Seyler classification, and having a carbon/hydrogen ratio between 15.5 and 16.5, gave the highest oil yields. With coals of this class, the process might possibly be worked with profit at the present time. There seemed no doubt, however, that it is only by further research into the influence of constitution of coal upon ease of hydrogenation, and the nature of the products obtained, as well as in the engineering technique of high-pressure work, that the more general application of the process could be made a commercial success. of



### Liquid Fuels other than Petroleum

Dr. A. E. Dunstan and Mr. H. G. Shatwell read a paper on "Liquid Fuels other than Petroleum." Despite the continual discoveries of new deposits of crude petroleum, the rapid increase in production and the recent heavy falls in prices, they said, intensive searches for indigenous liquid fuels in coal-bearing countries had been in progress for some years, whilst important investigations had been conducted in which the conversion of solid into liquid fuels is the chief aim. These activities were influenced to only a small degree by economic considerations, but had their source almost entirely in political and strategic movements, since it was not going too far to state that entire armies would be immobilised unless the necessary supplies of liquid fuels were forthcoming. The economic factor involved arose from the fact that solid fuels were solid, introducing handling costs of the first importance. For this reason, coal might be increasingly gasified at the pit-head and the railroads utilised as means for laying pipe lines to the great towns, the gas being conveyed under high pressure into the existing low-pressure receivers.

The carbonisation of coal at low temperatures gave smokeless solid fuel as the main product and primary tar as a by-product, the latter being obtained in yields of about 16 gallons per ton of coal carbonised. Primary tars differed from crude petroleum in that they contain an average of 33 per cent. of tar acids or phenols, and were rich in unsaturated hydrocarbons and pitch. Tar-acids could be employed as motor-spirit though they had been used with some success in Diesel engines; their chief value lay in the possibility of converting them into benzol hydrocarbons. The oils remaining after removal of pitch and phenols resembled "cracked" rather than natural petroleum and their refining must be modified accordingly. The authors had found that primary tar straight-run spirit possesses an anti-knock equivalent equal to that of benzol, whilst the spirit obtained by cracking the tars also had anti-knock properties.

Hydrogenation of coal by the Bergius process gave an average yield of 140 gallons of liquid products per ton of coal. The crude oil was probably closely related to primary coal tars, and its treatment would warrant special investigation. The economics of berginisation would depend largely upon the cost of hydrogen, and it was for this reason that Bergius had recently evolved an ingenious method for recovering hydrogen from the gases leaving the plant. The liquefaction of coal could also be effected by transforming the raw material, after a preliminary carbonisation, into water-gas, the latter being then treated under different conditions to give a variety of products. Thus the Badische Anilin und Soda Fabrik and Patart manufactured synthetic methanol by passing water-gas at high pressure and at about 420° C. over certain catalysts from which iron must be rigorously excluded. Fischer, on the other hand, prepared synthol under similar conditions of temperature and pressure, but by the employment of iron coated with alkali. Both methanol and synthol possessed properties which militated against their value as motor-spirits, but they would readily find application in other directions.

Finally, by passing purified water-gas over iron, nickel, or cobalt at atmospheric pressure and at temperatures of 150° to 270° C., Fischer and Tropsch had succeeded in preparing a product which consisted entirely of hydrocarbons and was to all intents and purposes synthetic petroleum.

### Carbonisation of Coal by Internal Heating

Professor M. W. Travers dealt with "The Chemical Study of Processes Involving the Carbonisation of Coal by Internal Heating." He stated that by drawing up a heat balance of the total heat entering and leaving the system in a process of complete gasification, or of carbonisation, of solid fuel, it was frequently possible to determine whether a particular system could or could not be carried out. If such a method were universally adopted, only a very small proportion of the processes for carbonisation and gasification of fuel which were patented annually would ever be put forward.

Unfortunately, there was no agreement or certainty as to the values of the very important constants that were used in the compilation of thermal balance sheets, and this was a matter which should engage the attention of a committee appointed by the Institute of Fuel. Some important data, for example, heats of combustion of hydrogen and carbon

monoxide, were based on inferior work and should be redetermined, whilst the heat of oxidation of carbon differed, depending on the form, graphitic or amorphous. Assuming, however, the known data available, taking customary specific heats of gases and specific heat of coke calculated from the thermal capacities of graphitic carbon and silica, the thermal requirements for (1) low-temperature carbonisation of coal by producer gas; (2) low-temperature carbonisation of coal by superheated steam; and (3) manufacture of water-gas from coal, have been calculated.

With respect to low-temperature carbonisation of coal by producer gas, in no single paper were the data for any particular experiment sufficient for complete analysis, but from a compilation of published data it could be shown that in order to effect the carbonisation of coal at 600° by producer gas or superheated steam, the following quantities were required:—

	Temperature of gas at outlet	Coal gasified per ton carbonised.	Gas (Tar free).	Superheated steam required.
	° C.	Ton.	C. ft.	Lb.
Coal with 5 per cent. moisture	250	0.475	66,000	2,480
Ditto ..	150	0.435	60,000	1,940
Dry coal ..	250	0.400	55,500	2,080
Ditto ..	150	0.310	42,000	1,640

In the manufacture of water-gas from coal it was shown that the quantity of water-gas required to carbonise one ton of coal was 63,500 c. ft. An output of 70,000 c. ft. per ton of coke probably represented the limit attainable with blue water gas practice and then only when 6 to 7 per cent. of carbon monoxide was permitted. 55,000 c. ft. was probably a very good average for carburetted water-gas practice. It therefore followed that the quantity of water-gas which could be produced in a process for the complete gasification of coal was under any circumstances insufficient to effect the carbonisation.

### The Rubber Research Bill

THE text of the Bill introduced last week in the House of Commons by Mr. Campbell, to provide for the collection of a contribution by rubber manufacturers in Great Britain and Northern Ireland to the funds of the Research Association of British Rubber and Tyre Manufacturers, has now been published. The proposals in the Bill are based upon the Cotton Industry Act, 1923, which provides for the maintenance of the Empire Cotton Growing Corporation, and involve the payment of a contribution by all rubber manufacturers in the United Kingdom and Northern Ireland of a sum not exceeding one twenty-fifth of a penny per pound in respect of all rubber used in their processes of manufacture, either as such or in the form of latex. The operation of the Bill is limited to five years, and the contributions to an average sum of £15,000 per annum.

### The Chemist as a Professional Man

THE assistant secretary of the Institute of Chemistry, Mr. R. Leslie Collett, F.I.C., addressed a meeting of the Bristol and South Western Counties section in the University Chemical Department on Thursday, November 17, on the subject of "The Chemist as the Professional Man." In the absence of Sir Ernest Cook, Mr. R. D. Littlefield, F.I.C., was in the chair. Mr. Collett said that the Institute of Chemistry was about to celebrate its jubilee, and called attention to the great changes which had taken place since the time of its foundation. Nowadays if a chemist were to succeed it was necessary that he should be as much a man of business and man of the world as a chartered accountant. There were now 5,200 members of the Institute. The local celebrations of the jubilee of the Institute will be held in Bristol on January 24, on the occasion of the visit of the president, Professor A. Smithells, F.R.S.

### Projected Manufacture of Synthetic Rubber

THE manufacture of synthetic rubber, according to an American rumour, will soon be started by the Synthetic Rubber Corporation of America, which is proposing to build three manufacturing plants at New York, New Jersey, and Connecticut. Mr. John J. Owen is the inventor of the process, by which he claims rubber goods are synthetically made of vegetable and gum compounds, chemically treated and vulcanised. Mr. Owen claims that his product can be put on the market at less than one-third the cost of rubber.

## Transporting Chemicals by Road

### The Latest Vehicles at the Commercial Motor Exhibition

*Economical transport is a problem that faces every chemical manufacturer and merchant. The latest development in lorries, tank wagons and light vehicles were shown this week at the Commercial Transport Exhibition at Olympia, which closes to-day (Saturday), and below we give details of some of the exhibits of interest to those engaged in the chemical industry. Some typical examples are illustrated on the opposite page.*

THE transport of chemicals, whether liquid or solid, in large or small bulk, is provided for by a great variety of vehicles at the eighth International Commercial Transport Exhibition. Exhibits ranged from powerful motor cycles with large box carriers up to steam lorries such as the Sentinel D.G.6, a new rigid bogie type six-wheeler, with a carrying capacity of 15 tons.

#### The Sentinel D.G.6

It is claimed by the designers, that this new model, the construction of which includes a number of original features, as the result of an effort to provide a high-speed 15-ton capacity lorry, is likely to set up some new heavy transport standards. Some of the special points are roller bearings of stainless steel, steam braking on four wheels, a two-speed gear engine unit with incorporated differential that gives eight-cylinder torque, an aluminium crankcase, and oil circulation to maintain gearbox and crankcase oil cool and at its maximum quality. In tests this new vehicle carried fifteen tons nineteen miles, the consumption being 1 cwt. of coal and about one pint of oil, and in five seconds it accelerated to 12 m.p.h., fully loaded, from which speed it can be stopped in 22 ft. on a wet road without skidding. Chain drive has been adopted, the makers pointing out that "shaft drive to function satisfactorily must increase excessively the unsprung weight of the rear axle."

The overall length is 26 ft. 3 in., the platform area 20 ft. by 7 ft. 0½ in., and the loading height 3 ft. 10½ in. The aluminium and alloy-steel engine actually gives an efficiency of 16 lb. of steam consumed per b.h.p. hour, and is capable of a maximum of 90 b.h.p. The controls include steam braking on four wheels, the steam operating through a special cylinder on two shoes in the four drums.

#### Medium Load Vehicles

The Bean exhibit included the Bean 30 cwt. commercial vehicle, which, introduced in June, is already well known at home and abroad. Among its distinctive features is an engine, notable for its liveliness, which develops over 38 b.h.p. Adequate bearing surfaces have been allowed everywhere, and the accessibility of the magneto, dynamo, and other components is an outstanding feature. Both clutch and gear box are easily got at, the latter being mounted in the frame as a separate unit. A useful body that can be fitted to the chassis is the tipper body. Of the single vertical screw type, it gives a tipping angle of 40 degrees, operated from either side of the vehicle. Hadfield's steels are used in the construction of the engine and chassis of the above vehicle.

A similar chassis, but for half-ton bodies, was shown by Morris Motors (1926), Ltd., while Morris Commercial Cars, Ltd., showed their 30 cwt. chassis fitted with various types of body.

#### Heavy Lorries

The name of Berliet has been known in the transport industry since the motor car was invented, and the fact that 25,000 Berliet lorries were in use by the allied armies during the war is a testimonial of their reliability and strength. The Berliet Motor and Engineering Co., Ltd., of Twickenham, were exhibiting, among other vehicles, a five-ton tipper with body constructed of metal. The engine has an R.A.C. rating of 30 h.p., having four cylinders with a bore of 110 mm., and stroke of 140 mm. Slide roller chains are used for the final drive. The springs are semi-elliptics underslung at the rear. Besides light lorry chassis the Berliet Company exhibited a model for heavier loads, the ten ton six-wheel chassis, and in view of the exceptional interest displayed in the use of gas producer plants for lorries, they were displaying their latest type plant fitted to a five-ton lorry using ordinary wood for fuel. This vehicle has passed the French Army tests for gas producer vehicles.

Karrier Motors, Ltd., were also showing a vehicle with a producer-gas plant. A useful low-loading lorry was that

made by the Vulcan company, which goes towards solving the problem of moving bulky and awkward goods in dock areas, goods yards, and similar congested districts. The platform space varies between 91.5 sq. ft. and 117.5 sq. ft., according to the size of the chassis, and the platform is about 29 in. above ground. Other heavy load wagons were exhibited by John I. Thornycroft and Co., Ltd., Commer Cars, Ltd., Leyland Motors, Ltd., Guy Motors, Ltd., and Armstrong-Siddeley's, the latter two concerns featuring heavy machines for haulage across rough country.

#### Tank Wagons for Chemical Industry

Thompson Brothers (Bilston), Ltd., had on show but one of the many kinds of wagon tanks that they manufacture for the purposes of chemical, brewing, milk, and oil industries. Tanks made by this firm are of elliptical shape, the model shown at the exhibition being 15 ft. 2 in. in length. The tank is constructed of 3-16 in. plate, electrically welded, and is divided into three compartments of 400, 500, and 600 gallons' capacity respectively. It is mounted by means of steel bearers, braced by stay tubes, on a Thornycroft type XB rigid six-wheel chassis. Three outlet discharge cocks are fitted in a cock box at the rear. The valves are said to be absolutely drip-proof, and cannot become damaged by means of the passage of foreign matter through them. An important point about the lids of the tank, which are fitted with a static eliminator lock, is that they cannot be opened until the earth connection is made. The cab is roomy, is made of metal panels, and fitted, of course with a fireproof screen. Thompson Brothers make a speciality of large capacity tanks and devote special attention to their production in stainless alloys and steels, suitable for the carriage of corrosive liquids, and are working in conjunction with Hadfields, Ltd., on the use of stainless steels for this purpose.

Another type of tank lorries are the production of Scammell Lorries, Ltd., the pioneers of British six-wheeled lorries. All kinds of liquids may be handled in their tanks, special linings being provided in the case of corrosive liquids, rubber for hydrochloric acid being among the linings that can be supplied. When dealing with acids the Scammell air compressor, driven from the engine, is particularly valuable, as by its means liquids can be handled for which no standard pump is suitable. The Scammell tank lorries are, of course, of the six-wheel frameless type, and are in use by a number of chemical, oil, milk, and brewery companies.

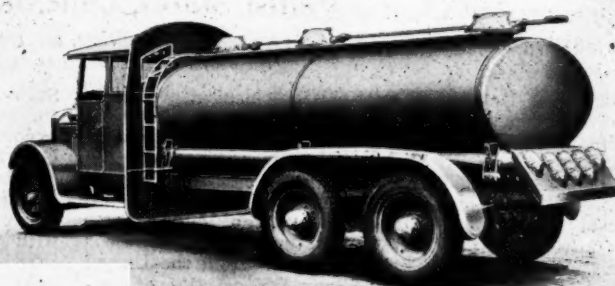
#### Motor Cycles and Light Vehicles

Twelve manufacturers were included in the collective exhibit of commercial motor cycles organised by the British Cycle and Motor Cycle Manufacturers and Traders' Union, Ltd. Of the twelve, eight exhibited their standard motor cycles attached to various types of sidecars for commercial purposes. Of the remainder, three were manufacturers of various types of three-wheeled vehicles, and the remaining exhibit was that of a sidecar manufacturer (Watsonian Folding Sidecar, Co., Ltd.), who specialises in the provision of commercial sidecars for attachment to any type of motor cycle. Among the exhibits were included definite examples suitable for practically all types of distribution.

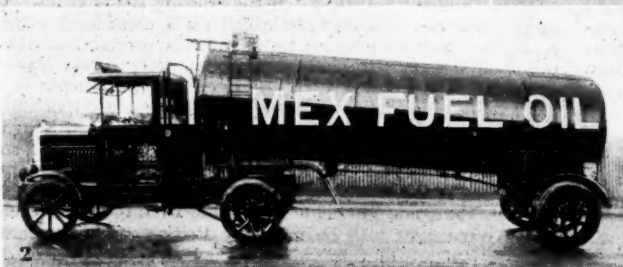
The exhibit of Rudge Whitworth, Ltd., was of particular interest in that it had the high useful load of about 9 cwt., obtained by the addition of a trailer to the motor cycle and sidecar. The Ariel company have set out to supply the demand for a lighter type of machine, and supply a box-sidecar which will carry loads up to 3 cwt.

On the accessories side there was a very attractive display by many asbestos, rubber, paint, varnish, and finish manufacturers. Crawshaw's Chemical Colander (shown by I.C.I.) should prove useful in garages where rapid degreasing of metal parts is required. It has been previously described in this journal.

Some Types of  
Modern Road  
Transport Vehicles

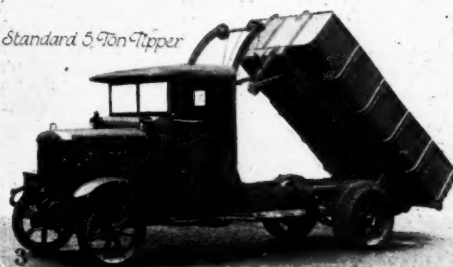


1

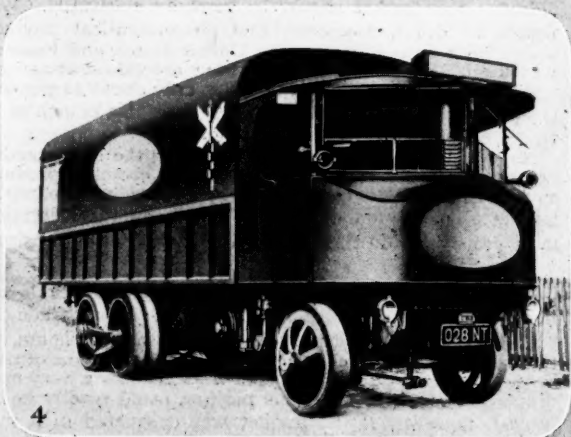


2

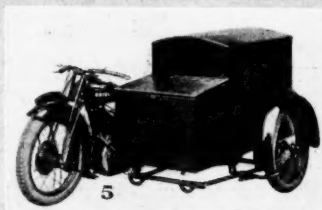
*Standard 5-Ton Tipper*



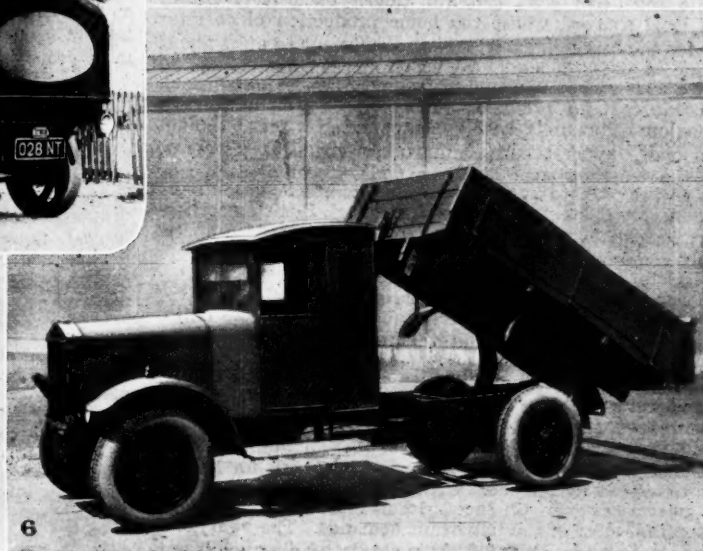
3



4



5



6

1.—1,600 GALLON THREE COMPARTMENT ELLIPTICAL TANK WAGON, BY THOMPSON BROTHERS (BILSTON), LTD.

2.—SCAMMELL 12-TON FRAMELESS TANKER WITH AIR COMPRESSOR.

3.—BERLIET 30 H.P. 5-TON STEEL TIPPER.

4.—THE NEW SENTINEL 15-TON STEAM WAGGON.

5.—ARIEL MOTOR CYCLE WITH 3 CWT. BOX CARRIER SIDECAR.

6.—TIPPER BODY ON BEAN 30-CWT. CHASSIS.



## Markets for Overseas Chemical Trade

### United States, Chile, Italy, and China

The following notes, which come at a particularly fitting time, are contributed by an authority with an exceptional knowledge of export conditions and opportunities.

ALTHOUGH the United States is a large chemical producing country, the domestic industry is unable to supply the whole of the market's requirements, and imports in certain directions are extensive. Great Britain is the largest individual supplier of chemicals generally, but in many specialised instances imports from the United Kingdom do not compare at all favourably with those from other countries, and greater efforts on the part of British manufacturers to increase their business would be well justified. Exports from the United Kingdom to the United States during 1925 show a loss of business in practically every direction compared with the previous year, a fact which also emphasises the need for closer attention to requirements. The figures are as follows:—

	1924. CWT.	1925. CWT.
Acids .. .. .	767	346
Chloride of Lime .. .. .	8,114	7,259
Crude Coal Tar Products .. .. .	3,672,228	3,211,810
Intermediate Coal Tar Products .. .. .	1,819	2,990
Finished Dyestuffs .. .. .	951	1,561
Ammonium Compounds .. .. .	13,300	7,100
Barium Compounds .. .. .	27,400	30,580
Sulphate of Copper .. .. .	10,480	12,880
Disinfectants, Insecticides, etc. .. .. .	44,376	3,346
Magnesium Compounds .. .. .	13,920	8,980
Sodium Compounds .. .. .	64,286	40,935
Fertilisers (Manufactured) .. .. .	360,980	579,800
Other Chemical Products .. .. .	£57,060	£42,939
Drugs and Medicinal Products .. .. .	£95,000	£91,837

In addition to the local industry, Germany and Switzerland provide very keen competition, the outstanding success achieved by the former country being largely due to the efficient methods of organisation adopted. Supplies of sulphur, caustic soda, and soda ash are almost exclusively drawn from local sources, whilst the home production of coal tar dyes for the textile industries is also sufficient to meet about 95 per cent. of the demand. Imports from the United Kingdom cover a wide range of chemicals, the most important of which are crude coal tar products, chiefly creosote oil and acids, ammonium compounds, barium compounds, glycerine, sodium compounds, mineral earth, and other chemical pigments. Since the reduction of the *ad valorem* tariff on coal tar chemicals, from 60 per cent. to 45 per cent., imports in this group have shown a very marked increase, and although British manufacturers have obtained a larger share of the trade, imports mainly comprise high-class finished products which are chiefly supplied by Germany and Switzerland.

The demand for chemical fertilisers is particularly heavy, and as local manufacturers are unable to satisfy the entire requirements of the agricultural industry good business opportunities are offered in this direction. Nitrogenous fertilisers, phosphate rock, and potash are imported in considerable quantities, while during recent years imports of sodium nitrate from Chile have largely increased. The leather and footwear industries are responsible for heavy purchases of tanning extracts, and here again there is scope for British firms to extend their trade. With regard to drugs, medicinal and pharmaceutical products, local and German manufacturers fill most of the important demands. The volume of business enjoyed by British firms in this latter direction is not large at present, although the position is undoubtedly susceptible of great improvement.

#### Chile

The Chilean chemical industry is practically confined to the production of nitrate of soda, aluminium sulphate, borax, and sulphuric acid, and in these products local concerns not only supply the home demand, but also enjoy an extensive export trade. With regard to other chemicals, supplies have to be drawn from outside sources, and business possibilities are therefore worthy of every attention. The total value of chemicals imported into the country, excluding drugs, pharmaceutical products and dyestuffs, may be placed roughly at £350,000 annually, the main supplying countries in their order of merit being Great Britain, Germany, and the United

States. The position enjoyed by the United Kingdom is on the whole encouraging, although it must be remembered that exports from Great Britain only slightly exceed those from Germany, and continued effort is therefore essential if the growing competition, which emanates from that country, is to be successfully checked. During 1925 the amount of business secured by United Kingdom was valued at £78,834, compared with £73,422 during the previous year.

It is confidently anticipated that during the next few years local industries will demand alkali on a considerably larger scale, and British manufacturers of this product, who have obtained a very firm hold on the market, should have no difficulty in increasing their sales. The requirements of the local tanning industry are very large, and good opportunities are also offered in this direction, as although United Kingdom firms are the principal suppliers of bichromate of potash, soda, and sulphide of sodium, other tannery chemicals are almost exclusively supplied by Germany. This latter country also controls the trade in chemicals for the wine industry, and an endeavour might well be made by British manufacturers to capture a share of this valuable business. Imports of dyes for the textile trades are also important, and as this demand will naturally increase with the development of the domestic industry the market should be carefully cultivated. With regard to drugs, medicinal and pharmaceutical products, competition from Germany, the United States, and France is very keen. Imports under this heading are valued at approximately £300,000 per annum, of which only about 12 per cent. is supplied by Great Britain. Prospects in this branch of the trade are considered to be very promising.

Apart from the necessity of maintaining the high standard of quality usually associated with British chemical products, and of keeping prices at the keenest possible level, the importance of adopting more efficient sales methods and undertaking more propaganda in this market cannot be over-emphasised.

#### Italy

Italy is a heavy purchaser of all classes of chemicals and, in spite of the growth of local industry, the import trade continues to expand. Germany, France, Holland, Belgium, and Great Britain are the chief suppliers, but the amount of trade in the hands of United Kingdom firms reaches a very small proportion of the total. This position could readily be improved, however, if the market was cultivated in a more thorough manner. Statistics respecting the total imports into Italy during 1924, 1925, and 1926, together with the comparative value of Great Britain's trade, are given below:—

	1924. LIRE.	1925. LIRE.	1926. LIRE.
INORGANIC CHEMICALS:			
Total Imports .. .. .	131,100,000	135,800,000	150,200,000
From United Kingdom .. .. .	21,100,000	35,000,000	28,700,000
ORGANIC CHEMICALS:			
Total Imports .. .. .	85,700,000	84,300,000	83,300,000
From United Kingdom .. .. .	6,900,000	7,100,000	5,600,000
FERTILISERS:			
Total Imports .. .. .	137,800,000	202,600,000	212,000,000
From United Kingdom .. .. .	6,300,000	15,900,000	5,800,000

Specific imports from Great Britain were as follows:—

	1924.		1925.		1926.	
	QUINTALS.	LIRE.	QUINTALS.	LIRE.	QUINTALS.	LIRE.
Sulphate of Ammonia .. .. .	41,700	6,300,000	98,900	15,800,000	34,300	5,800,000
Sulphate of Copper .. .. .	41,500	9,700,000	91,900	22,400,000	77,100	19,700,000
Caustic Soda .. .. .	10,200	1,800,000	4,400	800,000	2,000	400,000
Other Inorganic Chemicals .. .. .	64,500	12,900,000	49,600	10,100,000	30,000	8,700,000
Organic Chemicals .. .. .	16,800	6,900,000	12,500	7,000,000	7,500	5,600,000
Pharmaceutical Products .. .. .	400	2,400,000	500	3,400,000	500	4,100,000
Colours and Dyes .. .. .	4,700	4,900,000	4,900	6,600,000	3,500	5,700,000

It is discouraging to note the loss of business sustained by United Kingdom firms during the latter year, particularly as imports generally increased, and efforts to counter foreign competition more successfully should not be delayed. Bicarbonate of soda, sulphate of copper and sulphate of potash and sodium, which are required in very large quantities, are mainly supplied by France and Germany, whilst French

manufacturers also control a large proportion of the trade in caustic soda. Supplies of fatty acids are principally obtained from France, fair quantities also being imported from Holland and Belgium. With regard to quinine, alkaloids, etc., supplies from Great Britain are practically negligible, and the trade is mainly in the hands of Dutch, German, French, and Swiss manufacturers.

The importation of chemical fertilisers has considerably increased since 1924, and the demand will undoubtedly further expand, in view of the steadily growing agricultural requirements. Local manufacturers of fertilisers are making every effort to extend their output, but the domestic production is only sufficient to satisfy a small proportion of the demand, and possibilities in this branch of the chemical trade are exceptionally good. The bulk of the business is at present enjoyed by France. The total importation of medicinal and pharmaceutical products during 1926 amounted in value to roughly 52 million lire, of which 4 million lire represented the value of Great Britain's share. Supplies are mainly drawn from France and Germany, and although British products have achieved an excellent reputation, they are too expensive to compete effectively with continental goods. The demand for dyestuffs, tanning extracts, etc., in Italy is very important, despite the progress of the local industry, and prospects in that direction are promising.

The severity of continental competition, together with the depreciated lira, undoubtedly provide handicaps to more successful sales of British chemicals, but if lower prices and greater credit facilities were offered Great Britain's trade should materially improve.

#### China

Notwithstanding the unsettled conditions prevailing in China, the potential value of this market should not be overlooked by United Kingdom firms. During 1925 the total imports of general chemicals amounted in value to 9,516,668 taels, compared with 9,295,134 taels in 1924. The corresponding figures for soda were 4,022,147 taels and 3,707,117 taels respectively, and for pharmaceutical and medicinal preparations 2,933,915 taels and 2,403,573 taels. The increased use of chemicals for manufacturing and fertilising purposes was responsible for the expansion of this trade, and the return to normal conditions will undoubtedly witness valuable improvement.

Imports of chemicals into China and Hong Kong from Great Britain during 1924 and 1925 were as follows:—

	CHINA.		HONG KONG.	
	1924. CWT.	1925. CWT.	1924. CWT.	1925. CWT.
Sodium Compounds.....	764,168	869,748	174,130	185,063
Sulphate of Alumina .....	—	8,380	—	—
Borax .....	5,293	4,925	—	—
Disinfectants and Insecticides .....	3,797	2,893	3,691	3,922
Distilled Glycerine .....	32,555	10,744	—	—
Red Lead and Orange Lead.....	3,305	3,951	3,057	2,061
Potassium Iodide .....	46	11	—	—
Caustic Soda .....	96,258	103,307	146,180	157,600
Ammonium Sulphate .....	—	—	—	—
Other Chemical Manufactures and Products.....	£22,326	£23,049	£13,438	£13,604

Sulphate of ammonia, soda ash, caustic soda, sulphide of soda, glycerine, chloride of lime, calcium carbide, nitrate of soda, saltpetre and silicate of soda form the chief classes of chemicals required and imports of these products are considerable. The demand for chemical fertilisers is rapidly growing, as the use of artificial fertilisers for the cultivation of rice, tea, cotton and sugar has not yet been fully developed. Future prospects in this particular section may therefore be considered good.

Germany, America, France, and Switzerland are the chief competitors for the trade in dyestuffs, imports from the United Kingdom being very small. The artificial silk industry requires large quantities of dyestuffs for dyeing fabrics, whilst fast dyes for cotton yarns and indigo and aniline dyes are also imported. In addition, good openings exist for the sale of medicinal and pharmaceutical products, tanning extracts, paints and varnishes. Increased business in these products should not be difficult to obtain, and British firms should spare no effort to cultivate the market thoroughly.

DISEASES OF OCCUPATIONS reported in Great Britain and Northern Ireland in October under the Factory and Workshop Act or under the Lead Paint (Protection Against Poisoning) Act included 2 cases of aniline poisoning.

## Reclamation of Waste Soda

### Italian Artificial Silk Developments

GREAT attention has been given in Italy to the most profitable use of the soda contained in the waste lye waters of the artificial silk industry. Several methods of reclaiming this soda are in use, but Professors Giordani and Cittadini, of the Electrochemical Laboratory of the Royal Engineering School of Naples, in concert with the Soie de Chatillon and the Elettrochimica Pomili at Naples, have worked out a new direct use of this soda which they believe will have decided economic advantage over its recovery. The Elettrochimica at Naples produces cellulose from various fibres by the action of chlorine gas by the Cataldi-Pomilio patents. Giordani and Cittadini have now proved to their satisfaction, by laboratory experiments with soda lye waste waters from the Soie de Chatillon, that this soda can be successfully used for the preliminary soaking operation in the preparation of cellulose in the chlorine gas process.

It has been suggested that an amalgamation of the Italian artificial silk and electrolytic soda industries would be most advantageous, as it would assure to the former a domestic supply of cellulose and a profitable use of the waste soda, and to the latter a satisfactory outlet for the chlorine gas obtained as a by-product of the industry.

### New High Record in Canadian Lime Production

LIME producers in Canada during 1926 shipped 11,825,736 bushels of lime, valued at \$3,781,484, an increase in quantity of 15 per cent. over the previous high mark for the industry of 10,256,542 bushels, at \$3,387,652, in 1925, states a report containing finally revised statistics, issued by the Dominion Bureau of Statistics at Ottawa. Canadian producers received an average of 30 cents per bushel for quicklime and \$11.59 per ton for hydrated lime. Lime importations into Canada decreased 17.7 per cent in 1926 to a total of 110,509 bushels, valued at \$42,855. Exports were recorded at 534,618 bushels, at \$344,616.

Employment statistics show that 89 salaried employees and 1,017 wage-earners were engaged in this industry during the year; their earnings totalling \$1,082,854. Fuel used in the lime industry during 1926 necessitated the expenditure of \$738,918; electric power cost \$50,072. The total primary power installation consisted of 31 units with a rating of 1,143 h.p., while electric motors in operation during the year numbered 177 units, rated at 3,250 h.p.

### Society of Public Analysts: Forthcoming Meeting

THE next meeting of the Society of Public Analysts will be held on Wednesday, December 7, at the Chemical Society's Rooms, Burlington House, Piccadilly, London, at 8 p.m. Demonstrations of apparatus will be made, as follows:—"Apparatus for Determining Benzoic Acid in Foods," by G. W. Monier-Williams; and "Sodium Flame for Polarimetric Work," by T. MacLachlan and A. W. Middleton. The following papers will be read:—"Oil Bromide Films and their Use in Determining the Halogen Absorption of Oils," by H. Toms (work done under the Analytical Investigation scheme); "Tests for Impurities in Ether," by G. Middleton and F. C. Hymans; and "Arsenic in Coated Papers and Boards," by H. J. Stern. An additional meeting of the Society will be held on January 18, 1928.

### British Celanese Preference Shares

THE Board of British Celanese, Ltd., have issued a statement to the effect that they have under consideration the method of dealing with the arrears of dividends on the cumulative preference shares, and their proposals will be communicated to the shareholders after the close of the current financial year. Any proposal which the directors may make will not involve any sacrifice on the part of the preference shareholders. The board have come to the conclusion that from the beginning of the company's next financial year, viz., March 1, 1928, the company will be in a position to pay regular dividends on the preference shares. Substantial and satisfactory progress has been made in carrying out the programme for the increase of production as recently outlined by the chairman.

## An Interview with Dr. Ineo de Vecchis

### The Evolution of the Desiccation Process

*Dr. de Vecchis, inventor and patentee of the desiccation process of beet sugar manufacture, has been on a visit to England with a view to the working of his process here. During his visit he was interviewed by a member of THE CHEMICAL AGE staff, whose notes appear below.*

DR. DE VECCHIS, who has been for 29 years engaged in the chemical industry, is well known not only in Italy but in other countries, especially France and Germany. After his studies at the University of Rome had been completed he attended a course of chemical engineering at Brunswick, Germany. He commenced his practice in the sugar and alcohol industries in Germany, and later was appointed manager of sugar works in Italy, where he also installed many works for different chemical industries.

He also formed a company for the selection and cultivation of beet seed, and during the war, when the Italian and French beet cultivators were in difficulties in obtaining supplies of seed, he was able to be of very great assistance to them. He was able to render important war services by his development of processes for the manufacture of acetone, of which there was absolutely no production in Italy at the time. Decorated with many orders, he has the honour of holding "L'ordine al merito del Lavoro," an Italian order which is conferred only on a very limited number of scientists and industrialists for services rendered to the country.

#### Extracting Sugar from Beet

Discussing his work with a representative of THE CHEMICAL AGE during his visit to London this week, Dr. de Vecchis said that in his long experience in the sugar industry he had always observed the complications of the ordinary methods of extraction, etc., especially those due to the difficulty of purification of the raw juices consequent on the presence in the actual juices of pectic, albuminoid, and gummy substances, etc., the elimination of which calls for a repeated liming, carbonation and sulphitation treatment, accompanied necessarily by intermediate reheating of the juices, repeated filtration, etc. Moreover, the ordinary process permits only a limited working season for the sugar extraction works, which is naturally uneconomical when one considers the quantity and cost of the installation necessary, which can be utilised only during three months of the year.

It is more than twenty years since the idea of conserving beet was first mooted, the object being to develop means of dealing with the beet throughout the year. Drying tests were made repeatedly by technicians, but until quite recently nobody had succeeded in obtaining a satisfactory method of drying under good economical conditions without alteration of the sucrose, and with the possibility not only of a long conservation of the cosettes without alteration, but also of the easy extraction of the total sugar content.

Noting that the impurities most difficult to remove from the beet juices as obtained by the normal process are those which have not been subjected to the deep physical modifications due to prolonged heat treatment (what is termed coagulation), Dr. de Vecchis carried out the experiment of submitting beet cosettes to a heat treatment under determined conditions of temperature which he had considered to be between 80° C. and 100° C. He found in this manner that, after two or three hours' treatment, not only did the cosettes lose almost all their contained moisture to within a minimum of 3 per cent., but that they were completely sterilised, while the albuminoid, pectic, and gummy impurities were completely coagulated.

#### The Drying Plant

It will be apparent that the greatest difficulty was to find a type of dryer which was practical from a commercial point of view and capable of drying large quantities of beet on a factory scale, and Dr. de Vecchis spent a great deal of time and money in seeking to build a satisfactory dryer. Finally, he states, he was fortunate enough to get into touch with the firm of Geo. Scott and Son (London), Ltd., to the excellent performance of whose dryer, evolved by them in collaboration with himself, he pays a tribute. Two units of this type have now been installed at Sanguinetto (Italy) having a drying capacity of 70 and 100 tons of beet per 24 hours respectively. The smaller unit was put to work in 1926, and both units have

now finished the treatment of the 1927 crop. During the whole time they have worked smoothly and efficiently, the fuel consumption being notably low.

The remainder of the process, e.g., the extraction of the sugar, is still working excellently, and will continue for some months to come. Dr. de Vecchis states that all visitors who desire to see the factory in operation will be welcomed. During the past few months sugar technologists from all over the world have paid visits and have been much impressed by the efficiency of the method and the performance of the plant. They have made numerous tests and find all Dr. de Vecchis's statements fully justified.

Dr. de Vecchis discussed specially several points that have arisen in connection with the report on the subject of the de Vecchis process recently made by Dr. B. J. Owen, who has been investigating it on behalf of the Ministry of Agriculture and Fisheries (see THE CHEMICAL AGE, October 29, p. 392).

Dr. de Vecchis was anxious to point out that while Dr. Owen wished to attribute to him the condition of drying in two stages, he (Dr. de Vecchis) would remark that no such condition was laid down in his patents, and that the reason for its adoption was that it was found to give economically improved results. Actually the dryer outlined in the report as having been devised by Dr. Owen would appear to be a three stage dryer (*vide* Appendix 1 of Dr. Owen's report).

Dr. de Vecchis is further of the opinion that certain statements in Dr. Owen's report may lead to misapprehension prejudicial to the desiccation process of beet sugar manufacture unless it is kept in mind that some of the experimental work on which Dr. Owen's report is based was carried out under conditions which did not adhere closely to those laid down in the de Vecchis patents. Dr. Owen reports that he had filtration difficulties at certain times. Dr. de Vecchis maintains that there are no difficulties if the process is properly carried out. He cites the instance of a test made which confirms this. At Sanguinetto a number of uncoagulated cosettes were mixed with coagulated cosettes and fed to the extraction battery. The consequent difficulties were such that the battery was completely choked, and the filter cakes formed were in such a slimy condition that it was impossible to wash them. The whole plant was thoroughly cleaned out and fully coagulated cosettes were taken from the dryers direct to the extraction battery. No further difficulties whatever were experienced.

At Sanguinetto a very fine white sugar is produced, and this despite the fact that the beet is of poor quality, and yields impure juices, consequent upon the fact that it is grown on recently "reclaimed" marsh land. At Oxford less colouring matter was found in the beet, but that, thought Dr. de Vecchis, was probably due to the fact that the beet used was of higher quality than Italian beet; it was, in fact, similar to beet grown in the north of France. The difference in colour had nothing to do with the method of extraction.

With reference to the dryer described in Dr. Owen's report (Appendix 1), Dr. de Vecchis thought it would be interesting to know if this has actually been built and put into successful operation. There are several points which seem to him to be uncertain, and it would appear that the anticipated air resistances in the bed of cosettes hardly agree with the results of tests on air resistance through various thicknesses of cosettes as given earlier in the report.

#### Petrol Tank Vessels Inquiry

MAJOR T. H. CROZIER, H.M. Chief Inspector of Explosives, and Professor J. S. S. Brame, of the Royal Naval College, Greenwich, have been appointed by the Ministry of Transport to hold an inquiry into the proposal to allow tank vessels laden with petrol to proceed higher up the River Thames than Thames Haven. The inquiry will be opened at the offices of the Port of London Authority, Trinity Square, London, E.C., at 10.30 a.m. on Tuesday, December 13. Persons interested are invited to attend.



## British Chemical Industry Developments As Explained to American Chemists

*Mr. W. J. U. Woolcock, who for some years has been so closely associated with British chemical industry, tells in the current issue of "Chemical Markets" (New York) the story of the industry in this country. His estimate of the position is the more interesting as it is intended to present a picture of British conditions for the study of the American people.*

At first sight, the history of British chemical industry during the past ten months, especially if reviewed from the manufacturers' standpoint, would probably be classed as one of the least interesting since the war. At the present time a sense of relief is being felt at the incidence of its closure.

Yet on closer examination it becomes clear that there have been developments and changes which are as important as any that have been made since the war period, and of course more important than any before that time. These developments reach into every branch and aspect of the industry including legislation, international relationships, new products, new companies, amalgamations, and overseas trade. Let us examine some of these changes more in detail.

### New and Significant Changes

For one new and significant change the year will long be remembered. It is true that the announcement of the combination, which has become known as the "I. C. I." was made late in 1926. Save apart from possibly interesting but generally uninformed publicity given to the subject in the daily Press, the effect of the amalgamation has only very gradually come to be felt by those not directly concerned. Even now the position is neither finally nor temporarily stationary, and in a sense the amalgamation process is incomplete. Nevertheless, while the member firms have been readjusting themselves individually, the combination has worked as such during the year, and at this comparatively early date it is possible to affirm that the misgivings of the early prophets have been completely negated by abundant evidence of many positive beneficial influences arising out of the consolidation. With a highly efficient representation which is world wide, the advantages of the amalgamation became almost immediately felt throughout all countries, and this has led to a universal feeling of confidence in the future history of chemical industry.

In another important section of the industry we find an important unit in the Yorkshire Tar Distillers, which has been growing rapidly during the last year or two, until it now represents almost the whole of the tar distilling interests of the county. Inasmuch as the region covered is one of the most important in this section of the industry, the move is of first importance to the tar distiller, though there is, of course, no question of monopoly of the trade in the movement.

### Friendliness of European Relationships

A considerable and increasing amount of speculation on both sides of the Atlantic has arisen on the relationships, actual and possible, between British and Continental chemical interests, but it is too early at the present moment to say what developments will take place, and to add to the already extensive and unreliable speculations is worse than useless. The subject cannot be passed over, however, without some mention of the conversations and conferences of British and Continental industrialists generally, which have been a feature of the past twelve months especially, and which have in no small degree helped to establish that exceptionally friendly spirit which pervades European industry, and which will do more to settle the anomalous conditions which to-day hamper international chemical trade and, in fact, almost all overseas business.

A short review of the chemical exports of the United Kingdom might be of interest as showing the trend of matters of universal significance. After 1919 and 1920, when, it will

be remembered, there was an acknowledged, boom period, chemical exports have risen to some \$125,000,000 and later declined gradually to rather more than \$100,000,000; this year it is not likely that there will be any material changes from 1925.

In view of the difficult trading conditions existing since 1920, due to abnormal currency fluctuations in the countries of some of our most important customers, and the keen competition during the world-wide depression of 1921-22, the record is not unsatisfactory. Up to 1925, competition for premier place in chemical markets was between England and the United States; but by increasing exports more than 50 per cent. in 1925, Germany far outran both competitors.

Without the coal strike of last year, the position of the United Kingdom would probably have been materially ahead of previous years, because, in spite of the exacting conditions during the greater part of the year, the export trade was not appreciably different from that of 1925. This year, the after-effects of the strike proved to be as serious a brake on trade as the strike period itself. Nevertheless, while exports have varied in activity to a remarkable extent, the tendency has been always towards expansion of trade, and it would seem that within the last month or so, a permanent improvement in conditions has been established.

### Holding the Chemical Trade

England is still as prominent as ever in those chemicals which have formed a broad formation of its export trade—crude coal tar products (tar, pitch, carbolic acid, and creosote), alkalis, painters' materials, and medicinal fine chemicals. At the same time there has been such a rapid improvement in exports of ammonium sulphate and bleaching powder since the strike, that one concludes that a still bigger market for these products is opening out to the British manufacturer. At least, the grave doubts of the early part of the

year concerning the recovery of Eastern ammonium sulphate markets are entirely dispelled.

### Fine Chemicals

Particularly interesting is our position with respect to Canadian trade. In this case, of course, conditions very highly favour American exports, especially in the case of heavy chemicals, in the trade of which transport factors are against us. Nevertheless, Great Britain has a footing in the markets for most imported chemicals; and in those substances into the trade of which the cost of transference does not materially intrude, this footing is more firmly established than ever. Altogether, therefore, the over-seas trade position is not at all unsatisfactory to British chemicals.

Potentially, at the beginning of the year, List H (ii) was published. This represents the additional chemicals which are liable to duty under the Safeguarding of Industries Act. We mention it here as evidence of developments which have been taking place during the past few years; to those who appreciate the significance of the additions, the list contains ample substantiation of the claim that the British fine chemical industry is more than simply an established section of chemical industry, and that it is forging ahead rapidly.

The Therapeutic Substances Act, together with the Regulations governing the manufacture and sale of these products, has been the subject of considerable attention during the



MR. W. J. U. WOOLCOCK

past few months. The proper conduct of various manufacturing processes concerned is, of course, of first importance in view of its immediate influence on the public welfare, and the attention which has been given to the subject by the Government Departments concerned is a measure of the growth of the industry in this country. The number of products which have been added to the list of Therapeutic substances during the past two years is—for this section of the industry—quite large, and ranges from the new compounds of arsenic applied in the treatment of infective disease, to vaccines, antitoxins, pituitary extract and antidiabetic bodies such as insulin and thyroxin.

In particular the last class—antidiabetic substances—deserves closer attention. Up to quite a recent date, it was recognised that the industry in this country could claim only a secondary place in world markets, and that almost hourly, the position was becoming more acute. It will be easily recognised that every stage—collection of crude product, sterilisation, manufacture, packing, etc.—which precedes the actual consumption of chemico-therapeutic substances demands the careful supervision of highly skilled technical experts and that in consequence, the question of developing manufacture comes in for very careful deliberation before decisions are made. When, therefore, the relation of Great Britain to world markets was most acute, the problem was additionally complicated; and in addition, the rapid progress which was being made in technique and research on therapeutic chemicals made any advance programme highly speculative. With these difficulties before them British manufacturers took the step forward which has been notably successful; so successful in fact, that within the course of a few months reports were coming in from all over the world that British insulin was being demanded in preference to that from other sources.

#### New Synthetic Medicinals

The reader is probably beginning to think that, after all, this is but a very small section of the chemical industry, but we must stay to point out the still more phenomenal history of thyroxin. It will be recalled that late in 1926, thyroxin was synthesised by a British chemist; previous to this the extract marketed was initially of natural origin, but within the course of a few weeks, the synthetic product was being produced in commercial quantities, and so a quality which carried with it all the advantages bestowed by a synthetic process of manufacture was available to the public almost immediately.

We watch daily for a synthetic insulin process, and with "synthalin" already well on towards the solution of the problem the search promises to be rewarded in the near future; in the meantime we rest confident of the capabilities of British manufacturers to cover the new ground which will thereby be opened up.

#### British Solvents

Another direction in which British manufacturers are expanding their interests is in the field of the new lacquer solvents. We must deny the potency claimed for the adverse criticisms which have been made against home manufactures of this class of compounds. It has been held by the consumer, be it noted, that the range of solvents made in this country is too limited and that prices are prohibitive. Our makers have even been accused of unwillingness to enter world markets.

In this connection, we had cause to investigate the position fairly exhaustively, and were convinced that on every one of these grounds, the criticism was entirely unjustified. As regards range of products, one need go no further than the advertising columns of the trade Press to find that in place of the solvents produced in other countries which are not made in the United Kingdom, there is an equally wide range of alternatives which are equal and in many cases superior to those offered from abroad. With respect to price considerations, it was ascertained that comparison was being made between entirely different qualities of products; and in so far as the attitude of British manufacturers to foreign markets was concerned, one concluded that it would be difficult to find a country where efforts were more concentrated on developing both home and export business than here. We have since had our findings confirmed, and this time by unsolicited disclosure of the attitude of competitive foreign manufacturers, who, we find, regard this

country as a very potential rival in solvent products markets.

#### Other New Products

We have dealt superficially with two only of many new classes of products that are being manufactured now in Great Britain. To extend the list to dyes, including the important new vat dyes of Scottish Dyes, Ltd., synthetic resins and plastics, furfural for the leather tanning industry, special forms of salt for the curing trade, and so on, would only be to repeat much of what has been said.

It is surely permissible, in an article on British chemical industry, to pay tribute to a section of home manufacture which helps materially to maintain the high standard of British chemicals; we refer to the products of the British chemical plant manufacturer.

Without doubt, the history of chemical plant manufacture in this country rivals all the stories woven round the manufacture of the newer chemical products, both with respect to the difficulties which face the industry and the success with which many of the problems have been tackled.

#### Standardised or Individual Design

On comparison with Continental and American practice, one finds a fundamental difference of attitude on the part of British chemical apparatus and equipment maker to his customers. In the former instances, the general tendency is to present the same standardised plant units to each and every customer, while the British practice tends more towards the consideration of every case individually on its merits. We would maintain that the case for either procedure is not yet completely made out, and it would be invidious to express comparison or to draw any firm conclusion. It will be granted, however, that the path which the British chemical plant manufacturer has chosen is by far the more difficult passage.

In closing, we might add to this paragraph a reference to the most recent attempt at co-operation between the plant manufacturer and the chemical manufacturer. Under the auspices of the Association of British Chemical Manufacturers and the British Chemical Plant Manufacturers' Association, there has been formed a joint committee, on which the two interests are fully represented, as well as the third necessary party—the maker of the media in which chemical plant is generally constructed. Naturally, stainless steel manufacturers are well represented, but it is important to note that the present committee will not confine itself to any one class of media or, on the other hand, to any one type of corrosion problem.

#### Fertiliser Merger in Japan

TWELVE Japanese fertiliser importing companies, including such large business firms as the Mitsui Bussan Kaisha, Mitsubishi Shoji Kaisha, Okura and Co., the Japan Artificial Fertiliser Co., and others, have organised an association for importing German potassium sulphate. The association members are entitled to sell German products imported through the Japan Carl Rhode Co., Inc. The association has decided to give encouragement funds of one yen per ton for those which sell between 2,000 and 3,000 tons, 1.50 yen for between 3,000 and 4,000 tons, and 2 yen for over 4,000 tons. It is agreed among them that those violating the association regulations shall be excluded from it, and that the Japan Carl Rhode Co. will not do business with them. Dyeing works have been floated in Kobe under style of Nippon Dyeing Co., Ltd., at a capitalisation of 800,000 yen fully paid up. The plant specialises in working up silk piece goods for export, representing the fusion of the three dyeing works in Kobe—namely, Shiozaki, Kitako, and Kobe Nerizone. Mr. Kikuchi Kichizo presides over the consolidated business.

#### Burst Steam Pipe Inquiry

THE report of a preliminary inquiry into an explosion from a cast iron steam pipe which occurred at the works of Joseph Crosfield and Sons, Bank Quay, Warrington, on June 13, has just been published. The inquiry was carried out by Mr. J. F. Blenkinsop, of the Board of Trade Surveyors' Office, Liverpool. The pipe was split for a distance of 2 ft. 8 in. longitudinally, the maximum opening being  $\frac{1}{4}$  in. The cause of the explosion was water hammer action, it being found that the steam trap on the burst pipe was choked and inoperative. Nobody was injured in the explosion.

### Chemistry and the Leather Industry

THE importance of chemistry in the manufacture of leather was emphasised by Mr. H. Salt, demonstrator in the Leather Industries Department of the University of Leeds, in a paper on "The Training of a Leather Chemist," which he read to the members of the Leeds Area Section of the Institute of Chemistry at the annual meeting of the Section held at Leeds on Friday, November 18.

It was curious, he said, that what was probably the oldest industry in the world should have been so late in developing the technical side. Leather chemistry could, generally speaking, be associated with the name of the late Professor Proctor, who had done more for the leather industry than any one man had done for any other industry. Leather manufacture had been considered to be a series of secret processes, the operation of which required years of practice before success could be obtained. The fact that chemistry could be useful to the industry had only been appreciated by a few scientists. At the outset, continued the lecturer, one must realise the wide field over which the work must extend. Skins of animals at once involved the chemistry of proteins, and tannage with vegetable tannins made some demand on botany as well as the chemistry of colloids. Tannage with oils opened up another wide field, as also did tannage with mineral salts. The machinery of the industry, peculiar in its construction and working, called for a knowledge of engineering, and the question of leather dyeing required some acquaintance with dyestuffs.

The courses at the Leeds University aimed, first and foremost, at the production of a chemist with the application of the knowledge acquired to the production of leather. Mentioning the ground covered in the University course, the speaker said it was interesting to note that an international method of analysis for use in the leather industry had just been approved which, to a large extent, had been devised in the Leather Industries Department of the University. A graduate in that Department was primarily a chemist, since the honours degree was accepted by the Institute as an approved degree on chemistry. Mr. H. J. Hodsman, Lecturer in Gas Chemistry at the University of Leeds, was re-elected hon. secretary and treasurer; and Dr. R. D. Abel, and Messrs. T. W. Price, D. McCandlish, and G. B. Hall were elected to four vacancies on the committee.

### Low Temperature Carbonisation, Ltd.

Low Temperature Carbonisation, Ltd., have circulated a letter among all Members of Parliament stressing the importance of low temperature carbonisation in view of possible debates on the coal industry. The company states that by its method of treatment of the normally almost valueless small coal, each ton distilled yields 14 cwt. of smokeless fuel called "Coalite," 20/22 gallons of oil, and about 6,000 cubic ft. of gas of thermal value about 700 B.T.U. The "Coalite" is sold mainly to domestic consumers; the oil is sold on the open market, and together with the gas, but without the "Coalite," has a market value of about eighteen shillings for every ton of coal treated. "Coalite" has great advantages as a household fuel. The works of the company are at Barugh, near Barnsley. There are five batteries of retorts, the first of which was started up in July. The process is working night and day, seven days a week, without any trouble whatever. The normal weekly output is 1,020 tons of "Coalite," 28,320 gallons of oil, and 7,000,000 cubic ft. of gas. Recently a colliery sent to the works of the company a sample 146 tons of its washed smalls for distillation and report. It yielded 103 tons of "Coalite," 3,431 gallons of tar oils, and 525,600 cubic ft. of gas of 670 B.T.U. value of 25 therms per ton. As a result, the colliery has decided to erect a plant for the treatment of 500 tons of coal per day in accordance with the process.

### Voluntary Liquidation of Chemical Company

IN pursuance of the provisions of the Companies (Consolidation) Act, 1908, a meeting of the creditors of the Kent Chemical Co., Ltd., Bartholomew Close, E.C., was held on Wednesday, at the offices of Hackett, Radley and Johnson, C.A., 448, Strand, W.C., when Mr. Andrews presided. It was stated that there were no trade liabilities, and the liquidation of the company was confirmed with Mr. R. S. Andrews as liquidator.

### Alleged Company Fraud: Trial Continued

SIR GEORGE TRUSCOTT continued the hearing at the Mansion House, London, on Thursday, November 17, of the summonses against Sir Charles Buckworth-Herne-Soame, Robert George Harley, and Colonel Edmund Octavius Eaton, alleging that they conspired together between January 1, 1914, and the present date, with other persons, to defraud such persons as might receive prospectuses and (or) pamphlets issued by the Chalk Fuel, Power, Gas, and By-Products Corporation, Ltd., and obtaining money from them by falsely pretending that certain reports appearing in the prospectuses and (or) pamphlets were true and genuine reports upon the fuel referred to (see THE CHEMICAL AGE, November 12, p. 446). Mr. Percival Clarke (instructed by the City Solicitor) appeared for the prosecution, and Mr. H. P. Valetta was counsel for the defence. It was stated by the prosecution that the alleged false pretences were in respect of certain reports purported to have been made by engineers in connection with tests of a chalk fuel for the Chalk Fuel, Power, Gas, and By-Products Corporation, Ltd., and which were issued in prospectuses of the company. The allegation was that the reports of well-known experts, when they appeared in the prospectuses and pamphlets of the company, were fictitious, and contrary to the opinions on the fuel expressed by the writers.

Mr. W. M. Mackay, a Leeds analytical chemist, recalled, said the functions of this fuel were to burn direct, and to produce gas and lime. Mr. G. H. Franklin, chief engineer at Haig's Distillery, Hammersmith, said a neighbour of his asked him to make a test of the fuel in their steam boiler. He did so, and the result was very unsatisfactory. He reported to Colonel Eaton to that effect. Later, he made a test of the fuel on the Selsey Bill Light Railway, but the calorific value of it was not high enough to raise sufficient power to pull the engine and two trucks. Mr. Franklin said he made a report, and told the company the fuel was very unsatisfactory. The reports in the prospectuses were not his, or anything like his.

Sir George Truscott: Is there no truth whatever in these reports?

Mr. Percival Clarke: None.

Mr. Franklin: They are made-up reports, with my name put to them.

The case was again adjourned.

### Voluntary Liquidation of Tar Distillers

IN pursuance of the provisions of the Companies (Consolidation) Act, a meeting of the creditors of Fredk. G. Holmes and Co., Ltd., tar distillers, Thames Tar Works, Northfleet, was held recently at 7 and 8, Poultry, London, when Mr. A. C. Surrey presided. He reported that the position as at November 2, showed liabilities of £14,044 17s. 3d. In addition there was a fully secured creditor for £2,151 4s. 9d., who held as security seven acres of land valued at £3,602 17s. 9d., showing a surplus of £1,451 13s. The bank held the deeds of three acres of land as security, investments valued at about £1,800, and the guarantees of Mr. F. G. Holmes and Mr. G. F. Holmes. The assets were:—cash, £417 13s. 2d.; plant and machinery at book value, £16,067 9s. 3d.; stock of tar, tar products, stores and barrels, £2,183; tank trucks and railway wagons on hire purchase, £1,815 9s. 9d.; motor lorry, £11 7s. 7d.; furniture valued at £185 0s. 1d.; freehold land of book value of £3,040 9s. 10d., which was held by the bank and fully secured creditors; book debts, £638 4s. 3d.; and other assets, £2,794 1s. 11d. The share capital was £25,000 in £1 shares, of which 23,227 were issued as fully paid. The liquidator said that the capacity of the works was 12,000 to 15,000 tons, and the actual tar dealt with was 14,000 tons. For 1926-7 the tar dealt with was 1,400 tons, which resulted in a loss. It was decided to confirm the voluntary liquidation of the company with the present liquidator.

### Application for Discharge

THE application for discharge of John William Freeman, trading as the Menzum Chemical Co., of Bradshawfield Mill, Bread Street, Bolton, chemical manufacturer, was heard on November 16 at the Court House, Bolton. The proceedings took place in 1926. The Official Receiver stated that he did not take a very serious view of the case, and there were no complaints from creditors. The discharge was granted subject to a suspension for three months.



## Investigation of Artificial Silks

### An Account of Microscopical Methods

At a meeting of the Manchester Section of the Society of Dyers and Colourists on Thursday, November 17, an interesting paper on "The Microscopical Investigation of Artificial Silks," was read by Mr. L. G. Lawrie, A.I.C.

Mr. Lawrie said that textile fibres were chemically such complicated compounds, and of so inert a character, that it was often difficult to ascertain the particular effects produced upon them by the various chemical processes met with in the textile industries. This was particularly true of artificial silks, and it was probable that every process, chemical or mechanical, to which these fibres were subjected altered their intimate structure, and that many of these changes were typical and characteristic of the process. These alterations could often only be ascertained by means of a microscopic examination, the value of which was dependent upon the correct recognition and interpretation of the structural markings and other peculiarities present in the fibres. Examined under the microscope the artificial silks were seen to be not, as formerly supposed, devoid of structure, but composed of a variety of different structural elements characteristic of the nature and variety of the particular artificial silk.

### Examination in Polarised Light

Artificial silk fibres might be examined by various conditions of illumination, as, for example, by transmitted, by reflected, or by polarised light. When examined by polarised light many beautiful colour effects were produced, the colours varying with the nature of the fibre. An interesting observation was that swollen fibres lost their colour when examined under polarised light, whilst fibres under tension showed a different series of more brightly coloured bands. Information of considerable technical importance could be obtained by an examination of the fibres by this method of illumination.

An examination of the cross-section of artificial silks was also of considerable value in obtaining an insight into the characteristic properties of the material. Not only did the physical and textile properties such as strength, covering power, etc., vary with the cross-section, but the latter also influenced considerably the dyeing properties of the fibre. Many other properties such as variation in diameter of the fibres, and their swelling in water and other liquids, could be ascertained by a microscopic examination. Measurements of the diameter of the fibre when dry and when immersed in water or other liquid were very illuminating, the absorption of water causing a definite swelling of the fibre which varied according to the type of artificial silks under observation.

## Conference of Institution of Chemical Engineers

THE Institution of Chemical Engineers announces an important series of meetings on the evenings of Wednesday, Thursday and Friday, December 7, 8 and 9. All the sessions will be held at the Chemical Society's Rooms, Burlington House, Piccadilly, London, W.1. On December 7 there will be one session only, at 5 p.m., when the president, Sir Alexander Gibb, will take the chair, and Mr. Norman Swindin will read a paper on "Submerged Flame Combustion." The two sessions on December 8 will be devoted to a discussion on "Refrigeration," the following papers being read: "The Design of Refrigerating Plants," by Mr. G. W. Daniels; "The Practical Aspect of Refrigeration as applied to the Chemical Industry," by Mr. L. Chew; and "Electrical Automatic Refrigerators for Domestic Use," by Mr. R. Mitchell. After an adjournment for dinner, the discussion on these papers will open at 8 p.m. On December 9, at 5 p.m., Mr. W. J. Jones will read a paper entitled "The Problem of Industrial Lighting, with some reference to the Chemical Industry." At 8 p.m. two papers will be read: "Continuous Weighing of the Contents of Vessels: The 'Weighmeter,'" by R. G. Parker, D. N. Jackman, and J. N. Vowler; and "The Properties of Silica and Fireclay Refractories in relation to their Industrial Usage," by Mr. A. T. Greene. The president and council of the Institution will be pleased to welcome all who may be interested in any of the above subjects. Application for admission to any particular session should be made to the hon. secretary of the Institution on or before Friday, December 2.

## Film Fire Prevention

### Draft Regulations Issued

THE text of the draft regulations which the Home Secretary proposes to make under Section 79 of the Factory and Workshop Act, 1901, for the manufacture, repair, manipulation, use or storage of cinematograph films on premises which come under that Act, has been issued. An accompanying memorandum states that the cinematograph film manufacturing industry is at present governed by the Celluloid Regulations, 1921, but fires which have occurred in recent years have shown that special precautions (different from those observed in other celluloid factories) are required where cinematograph films are being made. The matter has, therefore, been discussed at conferences convened by the Chief Inspector of Factories and attended by representatives of the trade. As a result, complete agreement was reached with regard to the further precautions which should be required, and these requirements are embodied in the draft regulations. Any objections must be sent to the Secretary of State within thirty days.

The draft regulations provide for the storing of cinematograph films in boxes or receptacles of approved material, and the collection of all waste and scrap films at frequent intervals during each day. It is provided that a cinematograph film shall not be manufactured, repaired, manipulated, or used in any room, unless the room is constructed of fire-resisting materials, the furniture and apparatus so arranged as to afford unimpeded egress for every person in the room in the event of fire, and the room adequately equipped with fire-extinguishing appliances. Means of escape in case of fire will have to include at least two separate safe exits from every such room, two safe ways of escape from the building available for all persons employed in the factory or workshop, and the opening outward of all doors and windows provided in connection with the means of escape. The use of naked lights and smoking materials where films are manufactured or stored is prohibited, while conditions are laid down regarding the construction of the electrical apparatus used.

## Improvements in Petroleum Refining

A JOINT meeting of the Liverpool Section of the Society of Chemical Industry with the Liverpool and North-West Section of the Institute of Chemistry was held at Liverpool University on Friday, November 18, Dr. Alfred Holt presiding over an exceptionally large attendance. Dr. A. E. Dunstan, F.I.C., of the Anglo-Persian Oil Co., Ltd., delivered a most interesting and instructive address on "Modern Improvements in Petroleum Refining." The lecture was profusely illustrated with lantern slides showing the developments which have taken place during the last few years, especially in regard to the machinery and stills used in the process of refining crude petroleum. Following the more technical part of the lecture came a cinematograph exhibition, the films, which were splendidly produced, illustrating the operations of recovering, transporting and refining oil in Persia. A cordial vote of thanks was passed to Dr. Dunstan, who expressed the pleasure it gave him to see such a large and evidently interested audience.

## Sulphur Chloride Fire on Lorry

A LARGE cargo of sulphur chloride, valued at several thousands of pounds, was destroyed by fire on the Bath road, near Slough, on Monday. It was being conveyed by road in a heavy motor lorry from London to Bristol, and while passing through Salt Hill it was discovered to be on fire. The consignment consisted of sacks of sulphur and drums of liquid, and these were soon ablaze. The driver and his mate brought the lorry to the side of the road, and the local brigade was quickly on the scene, and began pouring water on to the fire, from which blue flames rose to a height of several feet. The resulting fumes drove the firemen back. They had no gas masks with them, and had to cover their faces with handkerchiefs and damp cloths. All traffic was diverted through Chalvey. After many attempts the firemen reduced the flames, and, while they played on the cargo, the driver courageously took his seat and drove the vehicle to a more isolated spot on the Farnham road, where there were no houses. After two hours' work the flames were got under control, but firemen remained on duty for some time in case of a recurrence of the outbreak.

## Anglo-Continental Guano Works

### Reorganisation Scheme Approved by Shareholders

THE ordinary general meeting of the Anglo-Continental Guano Works, Ltd., was held on Tuesday in London, Sir Archibald Mitchelson (chairman of the company) presiding.

Sir Archibald Mitchelson stated that the "Anglo" group had continued to improve its methods of manufacture during the last twelve months, and, although they had not yet completed their programme, they had made satisfactory progress, and all process costs at their London factory, per ton manufactured, had been lower than in the year before. In one or two years they hoped to have finished the improvements they wanted to make in order more effectively to meet foreign competition.

### The Reorganisation Scheme

At the end of the ordinary meeting, an extraordinary general meeting of the company was held to consider resolutions approving a scheme for the reduction and reorganisation of the share capital. The chairman said for some time now the board had had under anxious consideration the best way of dealing with, first, the post-war depreciation of the company's assets; and, secondly, the accumulation of about four years of arrears of dividend on the company's preference capital. It was proposed to dispose of the preference dividend arrears, for the four years to December 31, 1927, by distributing among the preference shareholders one new fully-paid preference share for every four such shares at present held. The next part of the scheme referred more particularly to the ordinary capital. After the most careful study of the position, the directors felt that the best way of dealing with the preference arrears on the one hand and, on the other, of so adjusting the valuation of the assets as to render it no longer necessary to allocate, year after year, large sums to depreciation, would be to ask the ordinary shareholders to agree to the reduction of the ordinary capital from £400,000 to £200,000. Of this £200,000, it was proposed to apply £75,000 to provide for the new preference shares to be distributed in respect of dividend arrears, and the balance of £125,000 for the purpose of writing down the assets. The effect of this would be that the preference capital would be increased by £75,000, and the issued share capital, as a whole, reduced by £125,000.

The resolutions embodying the above proposals were carried unanimously. At separate meetings of the holders of preference shares and the holders of ordinary shares subsequently held, resolutions approving the scheme were unanimously carried.

## U.S. Synthetic Chemical Manufacturers Oppose Tariff War

FEARING that the invocation by the U.S. Government against France of retaliatory tariff measures may embarrass some consumers of synthetic organic chemical, the Synthetic Organic Chemical Manufacturers' Association of the U.S. has addressed a letter to the President, in which certain points are offered for consideration in view of the possibility of an increased import duty or of a complete embargo.

The synthetic organic chemical industry of the United States, of which the Association represents a substantial portion, it is stated, has developed to the point where the most drastic provisions invoked against the products of the similar industry in France would work no hardship on the American consumers of such products. The volume and variety of synthetic organic chemicals of the United States could easily be increased to care for all domestic requirements, and while it is hoped some other method may be found, there need be no fear that the imposition of even the most drastic provisions of the Tariff Act would create any serious difficulties for the American consumers.

### Appointment Vacant

Senior Lecturer, with good Honours degree in chemistry, in the Department of Pure and Applied Science, Loughborough College. The Registrar. December 1.

THE DEAD SEA CONCESSION is reported to be still under discussion. Transjordan is said to be taking part in the negotiations regarding the details, and wishes to receive a portion of the profits. It is also desired that the narrow-gauge line connecting Jericho and Beisan shall mainly pass through Transjordanian territory.

## Chemical Matters in Parliament

### Beet Sugar Subsidy

In answer to a question by Mr. Stephen (House of Commons, November 17), Mr. Guinness said that the total weight of sugar produced from British beet in this country during the operation of the subsidy up to November 16, 1927, was 5,529,311 cwt., of an estimated wholesale value, duty paid, of £8,250,000. The subsidy paid amounted to £5,385,908.

### Celluloid Factories Legislation

The Secretary of State, asked by Viscount Sandon (House of Commons, November 17) whether celluloid factories would be brought under the same restrictions as explosive factories in forthcoming legislation, stated that serious fires had shown the necessity of requiring the adoption of much more stringent precautions than those at present in force. He was therefore about to issue two draft codes of amendment Regulations—one dealing with the manufacture of film, and the other dealing with works in which waste film is manipulated. These Regulations would introduce a number of safeguards. In answer to Mr. W. Thorne the Home Secretary said he was afraid there was some truth in the statement by a factory inspector about the number of factories she was called upon to examine making it impossible to do the inspection properly.

### Imperial Agricultural Research Conference

In answer to Mr. Roy Wilson (House of Commons, November 21), Mr. Ormsby-Gore said that twenty-three non-self-governing Colonies, Protectorates, and Mandated Territories were represented at the Imperial Agricultural Research Conference. He proposed to communicate the recommendations of the Conference to all Colonial Governments concerned as soon as the Report of the proceedings was available.

### Oil Fuel from Coal

Replying to Mr. Wheatley (House of Commons, November 22), Lord E. Percy said that the experiments which were being carried out at the Fuel Research Station and Richmond, and the large number of similar experiments elsewhere, had proved the technical possibility of extracting oil fuel from coal, but it was, he thought, obvious that the Government could not and should not express an opinion on the commercial prospects of any process based on these experiments.

## "C.A." Queries

*We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries:—*

85 (*Metaldehyde*).—"We should be obliged if you would advise us if there are any makers in this country of metaldehyde. If not, could you say who are the makers on the Continent and also if there are any firms who import it into this country."

## Chemical and Metallurgical Progress in Sweden

SOME outstanding achievements in the field of engineering and technology were reported at the annual meeting of the Swedish Academy of Engineering Science just held at Stockholm. The head of the Academy, Commercial Councillor Axel F. Enström, gave a review of the past year's work and reported that three important steps for the furthering of industrial research had been taken. The Jernkontoret (Iron and Steel Institute) planned a special research institution for the benefit of Swedish steel manufacture, Svenska Cellulosa-föreningen (the Swedish Pulp Makers' Association) had taken the initiative of founding a chair at the Royal Technical College of Stockholm, and an association for agricultural technique had been organised for research work in connection with the use of electric energy for agricultural purposes. The research work in fuel and heating technology undertaken by the Academy had been primarily concentrated on the problem of obtaining oil from coal. Councillor Enström expressed his anxiety on account of the rapidly growing number of international congresses, and urged a more systematic international planning of the congress work in order to avoid a reaction against present abuse that might seriously harm really valuable and desirable enterprises of this kind.

## From Week to Week

FATAL INDUSTRIAL ACCIDENTS reported during October included 3 in chemicals, etc., factories.

SIR WILLIAM ALEXANDER arrived at Southampton this week on the *Aquitania*, from New York.

J. AND A. CHURCHILL, the scientific publishers, have moved their offices from Great Marlborough Street to 39 and 40, Gloucester Place, Portman Square, London, W.1.

A SECOND INTERNATIONAL CONFERENCE on bituminous coal will be held at the Carnegie Institute of Technology, Pittsburgh, during the week commencing November 19, 1928.

INDIAN INDIGO EXPORTS in September amounted to 254 cwt., against 39 cwt. in the same month last year. The total exports for the period January to September, 1927, were 1,504 cwt.

LT.-COL. H. F. KEMBALL (of Kemball, Bishop and Co.) and Mr. F. McLeod (of the South Metropolitan Gas Co.) are among the five industrial representatives who have been nominated by the Federation of British Industries to act on the recently formed Smoke Abatement Advisory Committee.

PITCH CANCER IS INCREASING in South Wales, and to devise means of dealing with it, a meeting has been arranged to take place in Cardiff between employers in the South Wales fuel trade and the Transport and General Workers Union officials and delegates. One of the proposals which will be discussed is the revival of the scheme for periodical medical examinations.

"THE COLOURING OF COLD CURED RUBBER" will be discussed by Mr. W. E. Sanderson, A.I.C., in a paper before the Manchester Section of the Society of Dyers and Colourists on Friday, December 9, at a meeting held jointly with the Institution of the Rubber Industry, in the lecture room of the Manchester Literary and Philosophical Society, 36, George Street, Manchester, at 7 p.m.

THE NON-INFLAMMABLE FILM CO., LTD., of Regent Street, London, have bought the National Projectile Factory, covering 35 acres, at Lancaster, for the purpose of conversion to a factory for the production of cellulose acetate for non-inflammable photographic films and the manufacture of similar products. Work is expected to commence in the spring or early summer next year.

AN EXPLOSION occurred in a compartment of the purifying shed at the Rhondda gasworks on Thursday, November 17. One man was hurled bodily out of the compartment, and three others scrambled to safety. Charles Oakes, a married man, of Porth, was badly burnt about the body and rendered unconscious, and with William Hudson Trealaw, who was also severely burnt, was taken to hospital.

THE GERMAN SUPERPHOSPHATE INDUSTRY is in a bad position, according to a statement by the American Consul in Frankfurt-on-Main, Mr. H. C. Claiborne, who reports that in spite of an increase in the consumption of nitrogen the demand for superphosphate has remained the same for the past year, while imports have increased. The falling off in the sales of German superphosphate is partly attributed to the introduction of the I.G.'s mixed fertilisers.

THE ANNUAL DINNER of the Manchester Section of the Oil and Colour Chemists' Association will be held at the Grand Hotel, Aytoun Street, Manchester, on Saturday, December 3, at 7 p.m. A number of well-known representative guests have already accepted the invitation of the committee to be present. The price of tickets is 7s. 6d., exclusive of wines. Application should be made to the hon. secretary, Mr. H. Clayton, 69, King's Road, Old Trafford, Manchester.

PROFESSOR ERNST COHEN, of the University of Utrecht, the eminent physical chemist, has had dedicated to him volume 130 of the *Zeitschrift für Physikalische Chemie*, on the occasion of the twenty-fifth anniversary of his appointment to his post. The volume is dedicated to him as a successful investigator and as "an unwearied protagonist for the return of friendly relations between the savants of nations separated by the war." The volume is of over 700 pages, and the numerous contributions include papers from German, American, British, Scandinavian, Italian, French, Japanese, Russian, Dutch, and other physical chemists. The French, German, English, and Italian languages are represented.

UNEMPLOYED INSURED WORKERS at October 24 in Great Britain in chemicals manufacture numbered 5,751 (males 5,029, female 722); in explosives manufacture, 1,266 (males 874, females 392); in paint, varnish, japan, red and white lead manufacture, 794 (males 654, females 140); and in oil, grease, glue, soap, ink, match, etc., manufacture, 5,159 (males 4,199, females 960). The percentages unemployed at the same date, in the same order of industries were: 6.1, 6.7, 4.2, 6.5. The revised percentages of unemployment, July to September, were (July 25, August 22, September 26, order as above): 6.1, 6.4, 6.3, 6.7, 5.6, 6.1; 3.8, 3.7, 3.9; 6.8, 6.6, 6.4. The estimated total number of insured workers in all the above industries at July was 212,360 (males 158,660, females 53,700). Since July, 1923, there has been (July, 1927) a decrease of 8,590 in the number of workers employed in chemicals manufacture (104,010 to 95,420).

THE ANNUAL REPORT of the British Cast Iron Research Association for the year ending June 30, 1927, has just been issued.

SIR HUGH BELL has been elected chairman of the Tees Conservancy Board for the twenty-fourth year in succession.

MR. S. T. HARMAN has joined the board of the British Cyanides Co., Ltd. He is a director of the Temengor Tin Mining Co., Ltd.

JAMES DOYLE, aged 25, was at Hebburn on Monday sentenced to six months imprisonment for the theft of scrap lead, the property of the United Alkali Co.

THE U.S. FEDERAL TRADE COMMISSION has issued an order forbidding the use of the word "British" to describe bath or toilet soap manufactured in the United States.

SYNTHETIC AMMONIA AND NITRATES, LTD., have decided to place with Dorman, Long and Co., Ltd., an order for 25,000 tons of constructional steel for extensions to the Billingham works.

DR. A. J. JINKINGS, senior lecturer in the department of pure and applied science in Loughborough College, has been appointed head of the chemistry department of Rutherford College, Newcastle.

AT THE LAST ASSOCIATE-MEMBERSHIP Examination of the Institution of Chemical Engineers, held in June and July of this year, the following candidates satisfied the examiners:—Mr. H. Hunter, Mr. E. Wallis, and Mr. E. W. Wigg.

AT THE OPENING MEETING of the SESSION of the North British branch of the Pharmaceutical Society in Edinburgh on November 18, an address on "The Chemistry of Thyroxine and other Hormones" was given by Professor Barger, of Edinburgh University.

RECENT WILLIS INCLUDE:—Professor Henry Richardson Procter, of Newllyte, Cornwall, for 22 years head of the Leather Industries Department of Leeds University, £17,502 (net personality £16,419). He left all his scientific and technical books and instruments to the Procter International Research Laboratory at Leeds University.—Lieut.-Col. James Patchett, managing director of Shropshire Iron Co., Ltd., and director of the Union Steel Corporation of South Africa, Ltd., £72,086 (net personality £65,391).

UNIVERSITY NEWS.—*Sheffield*: In the twenty-second annual report of the Senate to the Governors of Sheffield University, mention is made of the unusually successful year experienced by the department of glass technology. Dr. W. E. S. Turner has helped to found a subsidiary department at Karlsruhe, Germany. The Council report that the enlargement of the Mining Department can be taken in hand almost immediately, as the result of subscriptions made by the Miners' Welfare Committee and by several colliery companies.

DR. W. THEVENAZ has been elected president of the Hull Chemical and Engineering Society for the current session. Dr. Thévenaz was born in Geneva in 1878, and was educated there, first at Calvin's College, and later at the University, where he worked under Graebe, the distinguished organic chemist. He graduated B.A. (in classics), B.Sc., and finally D.és.Sc. Subsequently he became a lecturer at Fribourg University, but left there to take up a position as a works chemist in Basle. In 1903, Dr. Thévenaz came to this country, to Read Holliday's, of Huddersfield. During the war he formed his own company, and has since specialised in research on organic pigment dyes, such as insoluble azo and anthracene dyes.

ARTIFICIAL SILK NEWS.—The I.G. Farbenindustrie is reported to have been negotiating with Hungarian interests for the erection in Hungary of a factory, probably for the manufacture of artificial silk. Hungary has only one artificial silk plant at present, and an I.G. plant in that country would probably sell to the entire Balkan market.—The total annual production of artificial silk in France is about 26,000,000 lb., according to figures recently published in the German review, *Wirtschaftskurve*.—British exports of mixed fabrics of artificial silk and cotton amounted to 6,488,568 square yards during October.—The capital of the Société Borvisik Française is to be raised from 20 million to 50 million francs. Reorganisation of the company is being carried out with the assistance of the Kuhlmann concern, Agache Fils, and Dollfus Mieg.

### Obituary

ERNST FABER, chief and joint founder of the Johann Faber A.-G., the famous Nürnberg pencil company, aged 73.

DR. WILLIAM R. ORNDORFF, professor of organic chemistry at Cornell University, U.S.A., on November 1, aged 65.

MR. HENRY LONSDALE WRATHALL, a member of the firm of Wrathall and Co., chemical brokers, The Albany, Liverpool, on Tuesday, November 22.

PROFESSOR JESERICH, known in Germany as "the Father of Legal Chemistry." He introduced a method of photographing blood corpuscles and carried out investigations on the detection of poison in human blood.

SIR A. F. PEASE, on Wednesday, November 23, aged 61, at his home at Middleton, Yorkshire, following a seizure while at the annual meeting of Horden Collieries, Ltd. He was formerly chairman and managing director of Pease and Partners, Ltd., and was a director of the National Benzole Co.



# References to Current Literature

## British

ANALYSIS.—Volumetric determination of lactose in presence of sucrose. J. H. Lane and L. Eynon. *J.S.C.I.*, November 18, pp. 434-435T.

Investigations into the analytical chemistry of tantalum, niobium and their mineral associates. IX. The separation of titanium from tantalum and niobium. W. R. Schoeller and E. C. Deering. *Analyst*, November, pp. 625-637.

APPARATUS.—Mercury oscillating pump. J. T. Donnelly, C. H. Foott, H. Nielsen, and J. Reilly. *J.S.C.I.*, November 18, pp. 437-438T.

GENERAL.—An active form of oxygen. F. R. Bichowsky and L. C. Copeland. *Nature*, November 19, p. 729.

Experiments on the rate of evaporation of small spheres as a method of determining diffusion coefficients.

—The diffusion coefficient of iodine. B. Topley and R. Whytlaw-Gray. *Phil. Mag.*, November, pp. 873-888.

The adsorption of butyric acid on water surfaces. C. R. Bury. *Phil. Mag.*, November, pp. 980-984.

OILS, ANIMAL.—The oil of *Centrophorus Granulosus*. A. C. Chapman. *Analyst*, November, pp. 622-624. A continuation of the author's work on shark liver oil.

OIL, MINERAL.—The ash of naturally occurring oil. M. Stuart. *Mining Mag.*, November, pp. 294-295.

The separation of the components of petroleum. VI. The action of glacial acetic acid. P. F. Gordon and J. Merry. *J.S.C.I.*, November 18, pp. 429-432T.

ORGANIC.—The structure of the normal and  $\gamma$ -forms of tetramethyl glucose. Oxidation of tetramethyl  $\delta$ - and  $\gamma$ -gluconolactones. W. N. Haworth, E. L. Hirst, and E. J. Miller. *J. Chem. Soc.*, October, pp. 2436-2443.

## United States

APPARATUS.—Extending the life of chemical glassware. J. T. Lyttleton, Jun., and G. A. Dasney. *Ind. Eng. Chem.*, November 1, p. 1271.

CATALYSIS.—The catalytic activity and adsorptive power of supported iron, cobalt, nickel, copper and silver. R. N. Pease and L. Stewart. *J. Amer. Chem. Soc.*, November, pp. 2783-2787.

GENERAL.—The effect of temperature on the basic viscosity of ice-cream mixes. A. Leighton and O. E. Williams. *J. Phys. Chem.*, November, pp. 1663-1668. The experiments reported show that viscosity in ice-cream mixes bears an inverse linear relationship to temperature.

Oxidation of ammonia. G. B. Taylor. *Ind. Eng. Chem.*, November 1, pp. 1250-1252.

OILS, MINERAL.—Deterioration of mineral oils. II. Mechanism of oxidation and action of negative catalysts as determined by static methods. B. Mead and collaborators. *Ind. Eng. Chem.*, November 1, pp. 1240-1245.

Action of refining agents on pure sulphur compounds in naphtha solutions. M. A. Youtz and P. P. Perkins. *Ind. Eng. Chem.*, November 1, pp. 1247-1250. An investigation of the desulphurising action of 95 per cent. sulphuric acid, silica gel, etc., on naphtha solutions of pure sulphur compounds.

OILS, VEGETABLE.—The lower fatty acids of coconut oil. E. R. Taylor and H. T. Clarke. *J. Amer. Chem. Soc.*, November, pp. 2829-2831. Fractionation of about 130 kilos. of methyl esters of coconut oil acids gave definite information as to the quantitative distribution of the various lower acids of the oil. The following were the percentages of the isolated acids: caproic, 0.46; caprylic, 8.7; capric, 5.6; lauric, 45.0; myristic, 16.5 to 18.0.

ORGANIC.—The existence of menthone in the enol form. S. M. Gordon. *Amer. J. Pharmacy*, October, pp. 599-603.

Hydroxynaphthoquinone studies. VII. The bromination of naphthazarin. A. S. Wheeler and B. G. Carson. *J. Amer. Chem. Soc.*, November, pp. 2825-2829.

The reactions of chloroacetic acid with ammonia and the preparation of glycine. G. R. Robertson. *J. Amer. Chem. Soc.*, November, pp. 2889-2894.

WOOD PRESERVATION.—Protection of marine piling against

borer attack. W. D. Ramage and J. S. Burd. *Ind. Eng. Chem.*, November 1, pp. 1234-1240.

## German

ANALYSIS.—The determination of very small quantities of iodine. P. A. Meerburg. *Z. physikal. Chem.*, Vol. 130, October, pp. 105-108.

A colorimetric micro-determination of sodium. H. K. Barrenscheen and L. Messiner. *Biochem. Zeit.*, October 20, pp. 308-313.

Differential electrometric titration as a precision method. D. A. MacInnes. *Z. physikal. Chem.*, Vol. 130, October, pp. 217-221 (in English).

COAL TAR.—New apparatus for tar distillation. O. L. Beer. *Die Metallbörse*, October 26, pp. 2385-2386; November 2, p. 2442; November 16, p. 2555.

COLLOIDS.—The gelatinisation of lyophilic sols and the structure of lyophilic gels. H. G. B. de Jong. *Z. physikal. Chem.*, Vol. 130, October, pp. 205-216.

Contributions to general colloid chemistry. XXII. Physico-chemical investigations on aluminium hydroxide sol. W. Pauli and E. Schmitz. *Z. physikal. Chem.*, Vol. 129 (3/4), October, pp. 199-222.

GENERAL.—Nitrocelluloses soluble in ethyl alcohol. S. K. Hagen. *Z. angewandte Chem.*, November 17, pp. 1359-1361.

World production and use of artificial fertilisers. K. Ritter. *Z. angewandte Chem.*, November 17, pp. 1361-1364.

The preparation of saponin substances from horse chestnuts. R. Vadas. *Chem.-Zeitung*, November 19, p. 895.

The action of benzenesulphonic and of naphthalene-sulphonic acids on gelatin. C. Marie and A. Buffat. *Z. physikal. Chem.*, Vol. 130, October, pp. 233-236 (in French).

ORGANIC.—Alkyl-anthracenes and trans-annular tautomerism. III. 1:5-Dichloro-9-benzylanthracene. E. de Barry Barnett, J. W. Cook, and M. A. Matthews. *Berichte*, November 9, pp. 2353-2366.

Isomeric derivatives of 1:5-dichloro-9-benzylanthracene. J. W. Cook. *Berichte*, November 9, pp. 2366-2369.

Racemisation experiments with optically active diphenic acids. R. Kuhn and O. Albrecht. *Annalen der Chem.*, November 9, pp. 221-229.

The alkylation of phenols. Introduction of the diphenyl-methyl group. M. Busch and R. Knoll. *Berichte*, November 9, pp. 2243-2257.

Dehydrogenation with selenium. II. O. Diels and A. Karstens. *Berichte*, November 9, pp. 2323-2325.

PLANT.—The installation and maintenance of pipes. I. P. Wiegand. *Chem.-Zeitung*, November 16, pp. 881-882.

## French

ANALYSIS, ORGANIC.—Identification and determination of aldehydes and ketones. M. S. Veibel. *Bull. Soc. Chim. de France*, October, pp. 1410-1416.

GENERAL.—Measurement of the oxidability of aluminium and its industrial alloys after activation with mercuric chloride. C. Quillard. *Comptes Rendus*, November 7, pp. 953-955.

Determination of the temperatures of commencement of fusion and of hardening of industrial glasses. E. Damour and A. Thuret. *Comptes Rendus*, November 7, pp. 939-941.

The system mercuric iodide-potassium iodide-water. M. Pernot. *Comptes Rendus*, November 7, pp. 950-953.

The action of acetylene on metals yielding explosive acetylides. J. F. Durand and M. Banos. *Bull. Soc. Chim. de France*, October, pp. 1294-1299.

ORGANIC.—The mechanism of the reactions accompanying the formation of Cadet's [arsenical] oil. A. Valeur and P. Gailliot. *Comptes Rendus*, November 7, pp. 956-958.

The hydrolysis of organic compounds and the concentration of hydrogen ions. S. C. J. Olivier and G. Berger. *Rec. Trav. Chimiques Pays-Bas*, October, pp. 609-618.

## Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

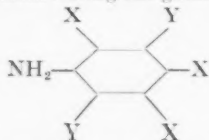
### Abstracts of Complete Specifications

- 278,496. DYESTUFFS AND INTERMEDIATES, MANUFACTURE OF. R. F. Thomson, J. Thomas, and Scottish Dyes, Ltd., Earl's Road, Grangemouth, Stirling. Application date, April 22, 1926.

Specification No. 251,313 (see THE CHEMICAL AGE, Vol. XIV, p. 550) describes the treatment of benzanthrone in sulphuric acid solution with manganese dioxide to yield a dibenzanthronyl, and by extraction of the oxidation product to produce an oxy-benzanthrone. Dialkoxy-dibenzanthrones and dibenzanthrone were also obtained. In this invention benzanthrone is replaced as a starting material by substituted benzanthrone having the 2 and Bz1 positions free, e.g., halogenated benzanthrone or benzanthrone containing methyl or other groups in the place of hydrogen. The oxidation yields a substantial proportion of a substituted dibenzanthronyl. The temperature is preferably 0°-20° C. and the substituted dibenzanthronyl may be purified from sulphuric acid solution. Part of the oxidation product is soluble in caustic soda solution, and is extracted and alkylated in the usual way. Alkyl derivatives may be fused with caustic alkali to obtain a dyestuff. Examples are given employing as starting materials 6-chlorobenzanthrone, isomeric chlorbenzanthrone obtained by condensation of 2-chloranthraquinone with glycerine, and methyl-benzanthrones having the 2 and Bz1 positions free.

- 279,146. AZO-DYESTUFFS, MANUFACTURE OF. O. Y. Imray, London. From I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, May 20, 1926.

These azo-dyestuffs are obtained by coupling a diazo compound of an amine having the general formula



where X denotes hydrogen or a monovalent substituent, one Y denotes a group  $\text{SO}_2\text{-alkyl}$ ,  $\text{SO}_2\text{-aralkyl}$ ,  $\text{SO}_2\text{-aryl}$ ,  $\text{SO}_2\text{-N}$ ,  $\text{CO-alkyl}$ ,  $\text{CO-aralkyl}$ ,  $\text{CO-aryl}$ ,  $\text{CO-N}$ , and the other Y

denotes halogen alkyl, aryl, oxyalkyl, oxaralkyl, or oxaryl, thioalkyl, thioaralkyl, or thioaryl, with a 2:3 oxynaphthoic acid arylide. Diazo compounds of alkyl-, aryl-, and aralkyl-amides of the alkyloxy-, aralkyloxy-, and aryloxy-meta-amino-benzoic acids, their homologues and substitution products are excluded. The dyestuffs may be produced in substance or on the fibre, or applied to any carrier or substratum. Suitable amines include the aminoaryl-, aryl-, aralkyl-, and arylsulphones, the aminosulphonic acid amides, corresponding keto compounds, and aminoaryl carboxylic acid amides in the aryl nucleus of which a substituent occupies the para position to the  $\text{SO}_2\text{-}$  or  $\text{CO-}$  group. The substituent corresponds with the second Y in the formula while an amino group is present in the ortho position to one of the Y substituents.

If the above sulphones or the corresponding ketones or acid derivatives also contain an amino group in the aralkyl or second aryl residue, both amino groups may be diazotised and the compounds will react with two molecules of a 2:3-oxynaphthoic acid arylide. The aminoaryl sulphonic acid amides can be obtained by the action of nitroaryl sulphochlorides on primary or secondary amines. The aminoaryl carboxylic acid amides may be obtained by the action of nitroaryl-carboxylic acid chlorides on primary or secondary amines. A number of examples of these reactions are given.

- 279,184. PURIFYING COAL GAS, APPARATUS FOR. G. Crisp, Hill View, Penycuic, Port Talbot, Glamorgan. Application date, July 28, 1926.

This apparatus consists of three series of horizontal tubes, each provided with a worm conveyor which propels the finely

divided purifying materials, such as iron oxide, in counter-current to the gas. After passing through one set of tubes the iron oxide passes through the second set against a counter current of air to revivify it, and then through the third set of tubes where the gas is given a final purification. Heating jackets may be provided on one or more of the purifying tubes and cooling jackets on one or more of the tubes in which the iron oxide is regenerated.

- 279,205. VAT DYES OF THE BENZANTHRONE SERIES, MANUFACTURE OF. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester, A. Shepherdson, and S. Thornley, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, August 26, 1926.

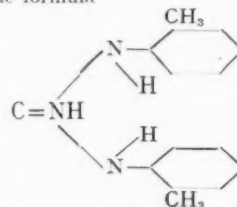
Specification No. 204,241 (see THE CHEMICAL AGE, Vol. IX, page 464) describes the production of vat dyes by treating dibenzanthrones with hydroxyl-amine in the presence of sulphuric acid and ferrous sulphate. It is now found that vat dyes are obtained by treating benzanthrone and its unsulphonated derivatives other than dibenzanthrones with hydroxyl-amine or salts thereof and fusing the intermediate product with caustic alkali. Examples are given of the treatment of benzanthrone and methyl benzanthrone.

- 279,219. ORES AND THE LIKE CONTAINING TITANIUM AND IRON, TREATMENT OF. C. A. Klein, 4, Brimsdown Avenue, Brimsdown, Middlesex, and R. S. Brown, 36, Manor House, Marylebone Road, London. Application date, September 17, 1926.

When ores containing titanium and iron oxides are smelted so that the iron oxide is reduced, the titanium oxide passes into the slag, which also contains some occluded iron, and the object is to separate this iron from the slag. The ore is finely divided and briquetted with carbon, a binding agent, and a flux such as barium carbonate as described in Specification 243,081 (see THE CHEMICAL AGE, Vol. XIII, p. 662). The briquettes are treated in a blast furnace at 1,500° C. to reduce the iron, and the slag is run into a water bath. The granulated material is separated, dried, and passed into a magnetic separator to remove coarser particles of iron. The slag is then finely pulverised and then again subjected to magnetic separation. The slag may be granulated by any other known method, as by a steam jet.

- 279,280. VULCANISATION PROCESS AND PRODUCT. A. C. Burrage, 314, Commonwealth Avenue, Boston, Mass., U.S.A. Application date, January 4, 1927.

Improved vulcanisation accelerators consist of the ditolyl-guanidines and particularly diorthotolyl-guanidine which is represented by the formula



This compound is obtained by the reaction of carbon bisulphide and orthotoluidine to obtain diorthotolyl thiourea which is then treated with litharge in the presence of ammonium nitrate and alcohol followed by filtration and neutralisation of the filtrate with caustic soda. The diorthotolyl-guanidine base is precipitated and dried, and is employed in the proportion of 1-2 per cent. in the vulcanisation of rubber. The vulcanisation period is relatively short, but the process is not so rapid as to over-vulcanise the rubber.

- 279,283. REDUCTION OF AROMATIC NITRO COMPOUNDS. W. Carpmal, London. From I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, April 21, 1926.

In the usual process for reducing an aromatic nitro compound to an amine, a mineral acid and an excess of iron has been used, and the iron has been transformed into a brownish

black oxide which is of little or no value as a pigment. In this invention, the process is carried out with a substantially greater concentration of hydrochloric acid or of the amine salt, and a finely divided iron oxide of great value is obtained. An example is given of the treatment of nitrobenzene with hydrochloric acid and iron filings. The heat of the reaction is usually sufficient, but if steam is introduced the concentration of hydrochloric acid must not be reduced below 6 per cent. The aniline produced is separated, and a deep black ferrous ferric oxide remains which may be converted into a red oxide pigment by ignition and oxidation.

279,336. STABILISED LATEX AND METHOD OF MAKING THE SAME. Rubber Latex Research Corporation, 185, Devonshire Street, Boston, Mass. (Assignees of M. R. Day, 23, Forsythe Street, Boston, Mass., U.S.A.) International Convention date, January 3, 1927.

Rubber latex is usually stabilised for transportation by the addition of a little ammonia, but the latex is still coagulable under some conditions, *e.g.*, in contact with a nucleus of raw rubber or some of the ordinary fillers, or by agitation. It is now found that rubber latex may be stabilised by the addition of a small proportion of blood or its constituent haemoglobin. The latex may then be coagulated by acids, but it is much more insensitive to other coagulating agents. It may also be used in mixtures containing uncured rubber and partly cured rubber without coagulation occurring. If the latex is to be kept for a long time, a preservative such as sodium fluoride is added.

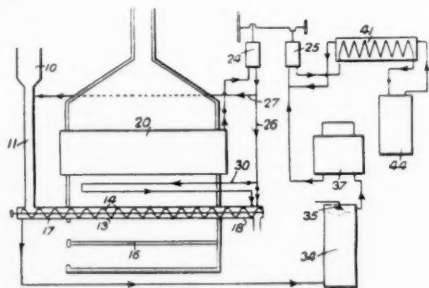
279,347. CATALYTIC PRODUCTION OF HYDROCARBONS FROM OXIDES OF CARBON AND HYDROGEN. J. Y. Johnson, London. From I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, May 30, 1927.

In the formation of gaseous, liquid, and solid hydrocarbons from oxides of carbon and hydrogen, a considerable amount of heat is liberated and may give rise to secondary reactions. It is now found that the heat from the reaction may be utilised by arranging the catalyst for the reaction in tubes mounted in a high pressure boiler, or by arranging tubular steam generators in the contact chamber, or by arranging both the steam generator and the catalyst tubes in a bath of fused metal.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention:—255,892 (A. Binz and C. Rath), relating to organic arseno compounds, see Vol. XV, p. 332; 264,879 (I. G. Farbenindustrie Akt.-Ges.), relating to monodiaz compounds of 1:4-diamino-anthraquinone-mono- or di-sulphonic acids, see Vol. XVI, p. 340; 265,994 (J. Komlos, A. Komlos, and E. F. Engelke), relating to carbon disulphide, see Vol. XVI, p. 402; 268,728 (U. S. Industrial Alcohol Co.), relating to dehydrating alcohol by distillation, see Vol. XVI, p. 558; 270,352 (I. G. Farbenindustrie Akt.-Ges.), relating to yellow azo dyestuffs, see Vol. XVII, p. 39.

#### International Specifications not yet Accepted

277,938. CARBON DIOXIDE. P. E. Haynes, East Aurora, N.Y., U.S.A. International Convention date, September 27, 1926.



277,938

Crushed limestone is fed from a hopper 10 through pipe 11 to a retort 13 having a conveyor 14. Steam is passed through in counter-current to cool the lime and then to hydrate it, while in the hottest zone it lowers the dissociation temperature to about 800°C. Carbon dioxide and steam pass to a scrubber

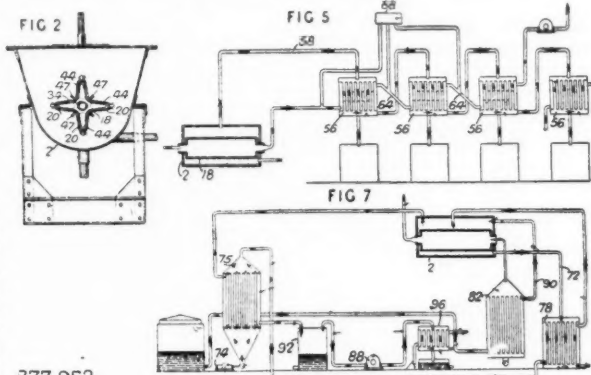
34 where steam is condensed, and carbon dioxide passes to a holder 37 from which it is drawn by a pump 25 and forced into a cooler 41 where it liquefies, and thence to an expansion vessel 44 where it solidifies. The pump 25 is driven by an engine 24 which receives steam from a boiler 20 heated by the waste gases. The exhaust steam is passed into the retort. The steam may be passed through a superheater 30 when quicklime is required.

277,946. PURIFYING AND FRACTIONATING OILS. Akt.-Ges. für Kohlensäure-Industrie, 21, Schiffbauerdamm, Berlin, and E. B. Auerbach, 34, Tempelhofer, Ufer, Berlin. International Convention date, September 25, 1926.

Mineral oils or their fractions, *e.g.*, crude paraffin, are purified or fractionated by treating with liquid carbon dioxide.

277,952. DISTILLING TARS, OILS, ETC. International Combustion Engineering Corporation, 43, Broad Street, New York. (Assignees of W. Runge, 136, North Arlington Avenue, East Orange, N.J., U.S.A.) International Convention date, September 21, 1926.

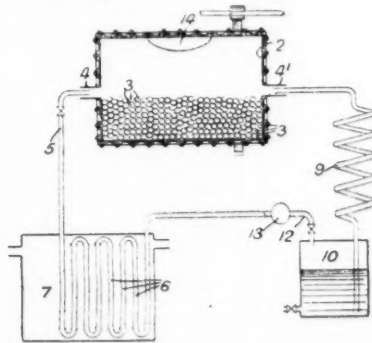
The tar or oil is heated in a still 2 by hot gases passing through a rotating member 18 having hollow radial blades 20



277,952

which carry a film of the material on their surface. The vapour passes through a series of tubular condensers 56, through which the waste gases are passed by pipes 58, 64. In a modification, the tar is drawn from a tank by a pump 74, and passed through preheaters 75, 78 before entering the still 2. The preheater 78 is heated by residue from the still which is withdrawn through pipe 72. Hot combustion gases are passed from the still through a heat exchanger 82, and some of the vapour from the still is drawn by a blower 88 through exchanger 75 and tank 92, and delivered through a condenser 96, exchanger 82 and pipe 90 back to the still.

277,975. BUTYRONE; DESTRUCTIVE DISTILLATION. F. Germain, 3, Rue la Boetie, Paris. (Assignee of H. Dolter, Haute-Vienne, France.) International Convention date, September 22, 1926.



277,975

Calcium butyrate is heated by a hot inert gas to obtain butyrylone. A rotary drum 1 is lined with ceramic plates 2 and contains balls 3 of metal, silica, or ceramic material. Gas such as nitrogen is heated by passing through heating pipes 6 and delivered through a pipe 5 and trunnion 4, and



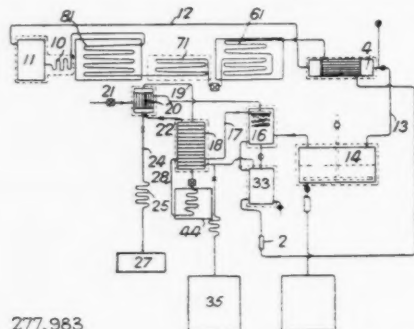
the gaseous products pass out through the trunnion 4<sup>1</sup> to a cooler 9 and receiver 10. The gas passes out through pipe 12 and pump 13 for use again. The material is fed and discharged through an opening 14.

277,974. HYDROGENATING COAL AND HYDROCARBONS. A. L. H. Spilker, 71, Varzinerstrasse, Meiderich, C. Zerbe, 49, Varzinerstrasse, Meiderich, and Ges. für Teerverwertung, Meiderich, Duisburg, Germany. International Convention date, September 23, 1926.

Coal, tar, pitch, etc., are hydrogenated and cracked at 200°–500° C. and a pressure of 50–200 atmospheres in the presence of a small quantity of iodine or a substance capable of yielding iodine or hydriodic acid. Thus, crude naphthalene may be treated with hydrogen in the presence of iodine at 300°–500° C. to obtain tetrahydronaphthalene, benzene hydrocarbons, etc. Coal tar pitch may be similarly hydrogenated to obtain ammonia, 20 per cent. of hydrocarbons boiling up to 200° C., 30 per cent. of hydrocarbons suitable for Diesel engines, and 20 per cent. of lubricating oils.

277,983. CRACKING OILS. W. J. Perelis, 14, Somerset Street, Boston, U.S.A. International Convention date, September 23, 1926.

Oil under turbulent flow is subjected to increase, decrease, and increase of temperature while the pressure is decreasing,



277,983

increasing, and decreasing. The oil is forced by a pump 21 through heat exchangers 20, 16 to a container 33, and thence to a pump 2 and cracking coils 61, 71, 81, in which the temperature and pressure vary as above. The products then deposit carbon in a coil 10 in passing to a container 11, and the vapour passes to a heat exchanger 4, vaporiser 14, and heat exchanger 16, to which the raw material is supplied. The liquid fraction passes to the container 33. Vapour passes to a rectifier 18 where it is treated with a spray of gasoline from pipe 22, and part of the condensate circulates through pipe 28 and boiler 44. Vapour from the rectifier passes to heat exchanger 20 and cooler 25 to tank 27, and a liquid fraction passes into tank 35.

#### LATEST NOTIFICATIONS.

- 280,492. Manufacture and production of orange vat dyestuffs of the anthraquinone series. I.G. Farbenindustrie Akt.-Ges. November 15, 1926.
- 280,501. Process for recovering concentrated acetic acid from dilute acetic acid. Suida, Dr. H. November 9, 1926.
- 280,511. Process for the production of pyridine compounds. Böhme Akt.-Ges., H. T. November 10, 1926.
- 280,512. Electrically-driven spindles for spinning yarn. I.G. Farbenindustrie Akt.-Ges. November 12, 1926.
- 280,520. Phenol resin compositions. Bakelite Corporation. November 10, 1926.
- 280,521. Phenol resin and process of making the same. Bakelite Corporation. November 11, 1926.
- 280,522. Manufacture and production of organic compounds containing oxygen. I.G. Farbenindustrie Akt.-Ges. November 15, 1926.
- 280,525. Photographic developers. I.G. Farbenindustrie Akt.-Ges. November 13, 1926.
- 280,529. Process for preparing tetrazoles. Boehringer, A. November 10, 1926.
- 280,530. Process of purifying magnesium and high-percentage magnesium alloys. I.G. Farbenindustrie Akt.-Ges. November 13, 1926.
- 280,553. Process of producing n-mono-alkyl derivatives of the aminophenols. Traube, Dr. W., and Hellriegel, Dr. E. November 15, 1926.
- 280,574. Process for the manufacture of aryl-amino-alkyl carbinols. Merck, Dr. W., Merck, Dr. K., Merck, L., Merck, W., and Merck, Dr. F. November 10, 1926.

280,587. Preservation and treatment of latex. I.G. Farbenindustrie Akt.-Ges. November 11, 1926.

280,595. Manufacture of dyestuffs. Soc. of Chemical Industry in Basle. November 13, 1926.

#### Specifications Accepted with Date of Application

- 256,610. Electrolytic production of metals, Process and apparatus for. A. C. Jessup. August 5, 1925.
- 260,001. Protection of rubber articles against ageing. Soc. Italiana Pirelli. October 17, 1925.
- 263,830. Purifying gas of the kind derived from the distillation of coal or coke, Process of. Ammonia. January 4, 1926.
- 265,169. Vulcanisation of rubber. Roesler and Hasslacher Chemical Co. January 27, 1926.
- 271,852. Extraction of carbon dioxide from gaseous mixtures, Means for. I.G. Farbenindustrie Akt.-Ges. May 28, 1926.
- 272,246. Electrolytic extraction of pure aluminium from crude aluminium alloys and the like, Process for. Aluminium-Industrie-Akt.-Ges. June 7, 1926.
- 279,916. Aliphatic acid anhydrides, Manufacture of. H. Dreyfus. June 1, 1926.
- 279,941. Inorganic jellies, Process for extracting and drying. K. Carpmal and K. S. Carpmal. (I.G. Farbenindustrie Akt.-Ges.) August 4, 1926.
- 280,034 and 280,039. Refining or cracking of hydrocarbons, Process for. R. K. Collins. November 12, and November 16, 1926.
- 280,073. Silver alloys. R. P. Joseph and W. F. Schnorr. February 7, 1927.
- 280,103. Electrodeposition of zinc. U. C. Tainton. April 29, 1927.

#### Applications for Patents

- Armstrong, J. J. V., and Plauson, G. Tar products. 30,988. November 18.
- Auchterlonie, W., and Franklin Processes, Ltd. Dyeing or bleaching fibres. 30,975. November 18.
- Bangham, P. F., Scottish Dyes, Ltd., and Thomas, J. Production of substituted benzol halides. 31,039. November 18.
- Barnes, R. S., Harris, J. E. G., Scottish Dyes, Ltd., and Thomas, J. Dyes and dyeing. 30,940. November 17.
- Barnes, R. S., Harris, J. E. G., Scottish Dyes, Ltd., and Thomas, J. Dyes and dyeing. 31,151. November 19.
- Beckett, E. G., Scottish Dyes, Ltd., Thomas J., and Woodcock, W. G. Production of anthraquinone derivatives. 31,152. November 19.
- Beghin, P., and British Alizarine Co., Ltd. Pyranthrone dyestuffs. 30,879. November 17.
- Bensa, F. Process for manufacturing chloroperylene quinones. 30,948. November 17. (Austria, November 26, 1926.)
- Billingham, W. E. Emulsification of tar, etc. 30,742. November 16.
- British Dyestuffs Corporation, Ltd., Linch, F. W., and Rodd, E. H. Preparing triarylmethane dyes. 30,911. November 17.
- Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of ortho-cyanaryl thioglycolic acids. 31,066. November 18.
- Edelman, S. Production of derivatives of 1-methyl 3-oxy 4-isopropyl benzol. 30,819. November 16.
- Fairweather, D. A. W., Scottish Dyes, Ltd., and Thomas, J. Production of dyestuffs, etc. 31,040. November 18.
- Fuchs, O. Utilising ethyl alcohol. 30,489. November 14.
- Gómez, M. G. Esterification of fatty acids. 31,072. November 18.
- I.G. Farbenindustrie Akt.-Ges. Process of treating cellulose. 30,795. November 16. (Germany, November 22, 1926.)
- I.G. Farbenindustrie Akt.-Ges. Treatment, etc., of latex. 31,025. November 18.
- I.G. Farbenindustrie Akt.-Ges. Manufacture of diacidyl-derivatives of naphthalene, etc., series. 31,053. November 18. (Germany, May 30.)
- Kunstharzfabrik, Dr. F. Pollak Ges. Production of condensation products. 30,725. November 15. (Austria, April 6.)
- Kunstharzfabrik, Dr. F. Pollak Ges. Production of condensation products. 30,726. November 15. (Austria, June 28.)
- Nobel's Explosives Co., Ltd., and Scharff, G. E. Prevention of rancidity in vegetable oil. 30,941. November 17.
- Rivers, F. Manufacture of oxide of iron, etc. 30,891. November 17.
- Silica Gel Corporation. Impregnated gel for absorbing water vapour. 30,918. November 17. (United States, November 19, 1926.)
- Silica Gel Corporation. Manufacture of catalytic gels. 30,956. November 17. (United States, November 19, 1926.)
- Silica Gel Corporation. Processes of removing sulphur compounds from gas mixtures. 31,058. November 18. (United States, November 19, 1926.)
- Soc. of Chemical Industry in Basle. Manufacture of dyestuffs. 30,551. November 14. (Switzerland, November 13, 1926.)
- Soc. of Chemical Industry in Basle. Manufacture of stable diazo compounds. 31,052. November 18. (Switzerland, November 18, 1926.)

## Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

### General Heavy Chemicals

**ACID ACETIC, 40% TECH.**—£19 per ton.  
**ACID BORIC, COMMERCIAL.**—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.  
**ACID HYDROCHLORIC.**—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.  
**ACID NITRIC, 80° Tw.**—£21 10s. to £27 per ton, makers' works, according to district and quality.  
**ACID SULPHURIC.**—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.  
**AMMONIA ALKALI.**—£6 15s. per ton f.o.r. Special terms for contracts.  
**BISULPHITE OF LIME.**—£7 10s. per ton, f.o.r. London, packages extra.  
**BLEACHING POWDER.**—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.  
**BORAX, COMMERCIAL.**—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)  
**CALCIUM CHLORIDE (SOLID).**—£5 to £5 5s. per ton d/d carr. paid.  
**COPPER SULPHATE.**—£25 to £25 10s. per ton.  
**METHYLATED SPIRIT 61 O.P.**—Industrial, 2s. 5d. to 2s. 10d. per gall.; pyridinised industrial, 2s. 7d. to 3s. per gall.; mineralised, 3s. 6d. to 3s. 10d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.  
**NICKEL SULPHATE.**—£38 per ton d/d.  
**NICKEL AMMONIA SULPHATE.**—£38 per ton d/d.  
**POTASH CAUSTIC.**—£30 to £33 per ton.  
**POTASSIUM BICHROMATE.**—4½d. per lb.  
**POTASSIUM CHLORATE.**—3½d. per lb., ex wharf, London, in cwt. kegs.  
**SALAMMONIAC.**—£45 to £50 per ton d/d. Chloride of ammonia £37 to £45 per ton, carr. paid.  
**SALT CAKE.**—£3 15s. to £4 per ton d/d. In bulk.  
**SODA CAUSTIC, SOLID.**—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.  
**SODA CRYSTALS.**—£5 to £5 5s. per ton, ex railway depots or ports.  
**SODIUM ACETATE 97/98%.**—£21 per ton.  
**SODIUM BICARBONATE.**—£10 10s. per ton, carr. paid.  
**SODIUM BICHROMATE.**—3½d. per lb.  
**SODIUM BISULPHITE POWDER, 60/62%.**—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.  
**SODIUM CHLORATE.**—2½d. per lb.  
**SODIUM NITRITE, 100% BASIS.**—£27 per ton d/d.  
**SODIUM PHOSPHATE.**—£14 per ton, f.o.b. London, casks free.  
**SODIUM SULPHATE (GLAUBER SALTS).**—£3 12s. 6d. per ton.  
**SODIUM SULPHIDE CONC. SOLID, 60/65.**—£13 5s. per ton d/d. Contract, £13. Carr. paid.  
**SODIUM SULPHIDE CRYSTALS.**—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.  
**SODIUM SULPHITE, PEA CRYSTALS.**—£14 per ton f.o.b. London, 1-cwt. kegs included.

### Coal Tar Products

**ACID CARBOLIC CRYSTALS.**—7½d. to 8d. per lb. Crude 60's, 2s. 4d. to 2s. 5d. per gall.  
**ACID CRESYLIC 99/100.**—2s. 11d. to 3s. per gall. 97/99.—2s. 4d. to 2s. 5½d. per gall. Pale, 95%, 2s. 3d. to 2s. 4d. per gall. Dark, 95%, 2s. 1d. to 2s. 2d.  
**ANTHRACENE.**—A quality, 2½d. per unit. 40%, £5 per ton.  
**ANTHRACENE OIL, STRAINED.**—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.  
**BENZOLE.**—Crude 65's, 9½d. to 9¾d. per gall., ex works in tank wagons. Standard Motor, 1s. 1½d. to 1s. 2½d. per gall., ex works in tank wagons. Pure, 1s. 5d. to 1s. 6d. per gall., ex works in tank wagons.  
**TOLUOLE.**—90%, 1s. 4d. to 1s. 8d. per gall. Firm. Pure, 1s. 6d. to 2s. per gall.  
**XYLOL.**—1s. 3d. to 1s. 10d. per gall. Pure, 1s. 9d. per gall.  
**CRESOSOTE.**—Cresylic, 20/24%, 10d. to 11d. per gall.; middle oil, 8d. to 9d. per gall. Heavy, 8½d. to 9d. per gall. Standard specification, 7½d. to 7¾d. ex works. Salty, 7d. per gall. less 1½%.  
**NAPHTHA.**—Crude, 9d. to 10d. per gall. Solvent 90/160, 9½d. to 10d. per gall. Solvent 95/160, 1s. 3d. to 1s. 4d. per gall. Solvent 90/190, 9½d. to 1s. 3d. per gall.  
**NAPHTHALENE CRUDE.**—Drained Creosote Salts, £5 per ton. Whizzed or hot pressed, £8 per ton.  
**NAPHTHALENE.**—Crystals, £11 10s. to £13 10s. per ton. Quiet. Flaked, £12 10s. to £13 per ton, according to districts.  
**PITCH.**—Medium soft, 8s. to 8½s. 6d. per ton, f.o.b., according to district. Market firm.  
**PYRIDINE.**—90/140, 5s. 9d. to 6s. 6d. per gall. 90/180, 4s. 6d. to 5s. per gall. Heavy, 4s. to 4s. 6d. per gall.

### Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

**ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).**—10s. 9d. per lb.  
**ACID ANTHRANILIC.**—6s. per lb. 100%.  
**ACID BENZOIC.**—1s. 9d. per lb.  
**ACID GAMMA.**—4s. 6d. per lb.  
**ACID H.**—3s. per lb.  
**ACID NAPHTHIONIC.**—1s. 6d. per lb.  
**ACID NEVILLE AND WINTHER.**—4s. 9d. per lb.  
**ACID SULPHANILIC.**—8½d. per lb.  
**ANILINE OIL.**—8d. per lb. naked at works.  
**ANILINE SALTS.**—8d. per lb. naked at works.  
**BENZALDEHYDE.**—2s. 3d. per lb.  
**BENZIDINE BASE.**—3s. 3d. per lb. 100% basis d/d.  
**BENZOIC ACID.**—1s. 8½d. per lb.  
**o-CRESOL 29/31° C.**—5½d. per lb.  
**m-CRESOL 98/100%.**—2s. 7½d. per lb. Only limited inquiry.  
**p-CRESOL 32/34° C.**—2s. 8½d. per lb. Only limited inquiry.  
**DICHLORANILINE.**—1s. 10d. per lb.  
**DIMETHYLANILINE.**—1s. 11d. per lb.  
**DINITROBENZENE.**—8½d. per lb. naked at works. £75 per ton.  
**DINITROCHLOROBENZENE.**—£84 per ton d/d.  
**DINITROTOLUENE.**—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.  
**DIPHENYLAMINE.**—2s. 10d. per lb. d/d.  
**a-NAPHTHOL.**—2s. per lb. d/d.  
**B-NAPHTHOL.**—10d. per lb. d/d.  
**a-NAPHTHYLAMINE.**—1s. 3d. per lb.  
**B-NAPHTHYLAMINE.**—3s. per lb.  
**o-NITRANILINE.**—5s. 9d. per lb.  
**m-NITRANILINE.**—3s. per lb. d/d.  
**p-NITRANILINE.**—1s. 7d. to 1s. 8d. per lb.  
**NITROBENZENE.**—6d. per lb. naked at works.  
**NITRONAPHTHALENE.**—1s. 3d. per lb.  
**R. SALT.**—2s. 2d. per lb.  
**SODIUM NAPHTHIONATE.**—1s. 8½d. per lb. 100% basis d/d.  
**o-TOLUIDINE.**—7½d. per lb.  
**p-TOLUIDINE.**—2s. per lb. naked at works.  
**m-XYLIDINE ACETATE.**—2s. 11d. per lb. 100%.  
**N. W. Acid.**—4s. 9d. per lb. 100%.

### Wood Distillation Products

**ACETATE OF LIME.**—Brown, £10 5s. per ton. Good demand.  
 Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.  
**CHARCOAL.**—£6 to £9 per ton, according to grade and locality. Foreign competition severe.  
**IRON LIQUOR.**—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.  
**RED LIQUOR.**—9d. to 10d. per gall.  
**WOOD CREOSOTE.**—1s. 9d. per gall. Unrefined.  
**WOOD NAPHTHA, MISCIBLE.**—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.  
**WOOD TAR.**—£4 to £5 per ton.  
**BROWN SUGAR OF LEAD.**—£40 15s. per ton.

### Rubber Chemicals

**ANTIMONY SULPHIDE.**—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.  
**ARSENIC SULPHIDE, YELLOW.**—1s. 9d. per lb.  
**BARYTES.**—£3 10s. to £6 15s. per ton, according to quality.  
**CADMIUM SULPHIDE.**—2s. 6d. to 2s. 9d. per lb.  
**CARBON BISULPHIDE.**—£20 to £25 per ton, according to quantity.  
**CARBON BLACK.**—5½d. per lb., ex wharf.  
**CARBON TETRACHLORIDE.**—£45 to £50 per ton, according to quantity, drums extra.  
**CHROMIUM OXIDE, GREEN.**—1s. 1d. per lb.  
**DIPHENYLGUANIDINE.**—3s. 9d. per lb.  
**INDIARUBBER SUBSTITUTES, WHITE AND DARK.**—5½d. to 6½d. per lb.  
**LAMP BLACK.**—£35 per ton, barrels free.  
**LEAD HYPOSULPHITE.**—9d. per lb.  
**LITHOPHON.**—30%.—£22 10s. per ton.  
**MINERAL RUBBER "RUBPRON."**—£13 12s. 6d. per ton, f.o.r. London.  
**SULPHUR.**—£9 to £11 per ton, according to quality.  
**SULPHUR CHLORIDE.**—4d. to 7d. per lb., carboys extra.  
**SULPHUR PRECIP. B.P.**—£47 10s. to £50 per ton.  
**THIOCARBAMIDE.**—2s. 6d. to 2s. 9d. per lb., carriage paid.  
**THIOCARBANILIDE.**—2s. 1d. to 2s. 3d. per lb.  
**VERMILION, PALE OR DEEP.**—6s. to 6s. 3d. per lb.  
**ZINC SULPHIDE.**—1s. per lb.

### Pharmaceutical and Photographic Chemicals

**ACID, ACETIC, PURE, 80%.**—£39 per ton ex wharf London in glass containers.  
**ACID, ACETYL SALICYLIC.**—2s. 4d. to 2s. 5d. per lb.  
**ACID, BENZOIC B.P.**—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. to 1s. 3d. per oz., according to quantity.

- ACID, BORIC B.P.—Crystal, 36s. to 37s. per cwt.; powder, 40s. to 41s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.
- ACID, CAMPHORIC.—19s. to 21s. per lb.
- ACID, CITRIC.—1s. 7d. to 1s. 8d. per lb., less 5%.
- ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
- ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.
- ACID, SALICYLIC, B.P. PULV.—1s. 4d. to 1s. 6d. per lb.; Technical.—11½d. to 1s. per lb. Good demand.
- ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
- ACID, TARTARIC.—1s. 3½d. per lb., less 5%.
- ACETANILIDE.—1s. 6d. to 1s. 9d. per lb. for quantities.
- AMIDOL.—7s. 6d. to 9s. per lb., d/d.
- AMIDOPYRIN.—8s. 6d. per lb.
- AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.
- AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimed: 1s. per lb.
- ATROPINE SULPHATE.—9s. per oz.
- BARBITONE.—5s. 9d. to 6s. per lb.
- BENZONAPHTHOL.—3s. 3d. per lb. spot.
- BISMUTH CARBONATE.—10s. 4d. to 10s. 7d. per lb.
- BISMUTH CITRATE.—9s. 10d. to 10s. 1d. per lb.
- BISMUTH SALICYLATE.—8s. 10d. to 10s. 1d. per lb.
- BISMUTH SUBNITRATE.—8s. 4d. to 8s. 7d. per lb.
- BISMUTH NITRATE.—6s. 1d. to 6s. 4d. per lb.
- BISMUTH OXIDE.—13s. 10d. to 14s. 1d. per lb.
- BISMUTH SUBCHLORIDE.—13s. 10d. to 14s. 1d. per lb.
- BISMUTH SUBGALLATE.—8s. 1d. to 8s. 4d. per lb. Extra and reduced prices for smaller and larger quantities respectively; Liquor Bismuthi et Ammon. Cit. B.P. in W. Qts. 1s. 1d. per lb.; 12 W. Qts. 1s. per lb.; 36 W. Qts. 11½d. per lb.
- BORAX B.P.—Crystal, 25s. per cwt.; powder, 26s. per cwt. according to quantity. Carriage paid any station in Great Britain, in ton lots.
- BROMIDES.—Potassium, 1s. 10½d. per lb.; sodium, 2s. 1d. per lb.; ammonium, 2s. 3d. per lb.; granulated, ½d. per lb. less; all spot. Large quantities at lower rates.
- CALCIUM LACTATE.—1s. 4d. to 1s. 5d. per lb.
- CAMPOR.—Refined flowers, 2s. 11d. to 3s. 1d. per lb., according to quantity; also special contract prices.
- CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.
- CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.
- CREOSOTE CARBONATE.—6s. per lb.
- ETHERS.—S.G. 730.—1s. 1½d. to 10½d., drums; other gravities at proportionate prices.
- FORMALDEHYDE.—£39 per ton, in barrels ex wharf.
- GUAIACOL CARBONATE.—4s. 9d. to 5s. per lb.
- HEXAMINE.—2s. 3d. to 2s. 6d. per lb.
- HOMATROPINE HYDROBROMIDE.—30s. per oz.
- HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
- HYDROGEN PEROXIDE (12 vols.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchester, 2s. 11d. per gal. B.P., 10 vols., 2s. 3d. per gal. In carboys. Winchester, 2s. 11d. to 3s. 9d. per gal.; 20 vols., 4s. 3d. per gal.; Winchester, 5s. per gal. Special prices for larger quantities.
- HYDROQUINONE.—3s. 3d. to 3s. 6d. per lb., in cwt. lots.
- HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
- IRON AMMONIUM CITRATE.—B.P., 2s. 2d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 2d. to 2s. 5d. per lb.
- IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.
- MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
- MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy Commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.
- MENTHOL.—A.B.R. recrystallised B.P., 17s. 9d. per lb. net; Synthetic detached crystals, 9s. to 12s. 6d. per lb., according to quantity; Liquid (95%), 11s. 3d. per lb.
- MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s. 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10d. to 5s. 11d. per lb. Special prices for larger quantities.
- METHYL SALICYLATE.—1s. 9d. per lb.
- METHYL SULPHONAL.—8s. 9d. to 9s. per lb.
- METOL.—9s. to 11s. 6d. per lb. British make.
- PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.
- PARALDEHYDE.—1s. 4d. per lb. Less in quantity.
- PHENACETIN.—2s. 6d. to 2s. 9d. per lb.
- PHENAZONE.—4s. to 4s. 3d. per lb.
- PHENOLPHTHALEIN.—6s. 6d. to 6s. 9d. per lb.
- POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—98s. per cwt. less 2½%.
- POTASSIUM CITRATE.—B.P.C., 1911; 1s. 8d. to 1s. 11d. per lb.; U.S.P.; 1s. 11d. to 2s. 2d. per lb.
- POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.
- POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb. according to quantity.
- POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.
- POTASSIUM PERMANGANATE.—B.P. crystals, 6½d. per lb., spot.
- QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz. bulk in 100 oz. tins.
- RESORCIN.—3s. 9d. to 4s. per lb., spot.
- SACCHARIN.—55s. per lb.; in quantity lower.
- SALOL.—2s. 4d. per lb.
- SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.
- SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923.—1s. 11d. to 2s. 1d. per lb. for 1-cwt. lots. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.
- SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
- SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.
- SODIUM NITROPRUSSIDE.—16s. per lb.
- SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—90s. to 95s. per cwt. Crystals, 5s. per cwt. extra.
- SODIUM SALICYLATE.—Powder, 1s. 7d. to 1s. 8d. per lb. Crystal, 1s. 8d. to 1s. 9d. per lb.
- SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.
- SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.
- SULPHONAL.—6s. 9d. to 7s. per lb.
- TARTAR Emetic, B.P.—Crystal or powder, 2s. 1d. to 2s. 2d. per lb.
- THYMOL.—Puriss., 10s. to 10s. 3d. per lb., according to quantity. Firmer. Natural, 14s. 3d. per lb.

### Perfumery Chemicals

- ACETOPHENONE.—7s. per lb.
- AUBEPINE (EX ANETHOL).—11s. per lb.
- AMYL ACETATE.—2s. per lb.
- AMYL BUTYRATE.—5s. 3d. per lb.
- AMYL SALICYLATE.—3s. per lb.
- ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.
- BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.
- BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.
- BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
- BENZYL BENZOATE.—2s. 6d. per lb.
- CINNAMIC ALDEHYDE NATURAL.—16s. 6d. per lb.
- COUMARIN.—10s. per lb.
- CITRONELLOL.—13s. 9d. per lb.
- CITRAL.—8s. 3d. per lb.
- ETHYL CINNAMATE.—6s. per lb.
- ETHYL PHTHALATE.—3s. per lb.
- EUGENOL.—8s. 6d. per lb.
- GERANIOL (PALMAROSA).—18s. 6d. per lb.
- GERANIOL.—6s. 6d. to 10s. per lb.
- HELIOTROPINE.—4s. 9d. per lb.
- ISO EUGENOL.—13s. 6d. per lb.
- LINALOOL.—Ex Bois de Rose, 14s. per lb. Ex Shui Oil, 9s. 9d. per lb.
- LINALYL ACETATE.—Ex Bois de Rose, 17s. 6d. per lb. Ex Shui Oil, 13s. 9d. per lb.
- METHYL ANTHRANILATE.—8s. 6d. per lb.
- METHYL BENZOATE.—4s. per lb.
- MUSK KETONE.—35s. per lb.
- MUSK XYLOL.—8s. per lb.
- NEROLIN.—4s. 6d. per lb.
- PHENYL ETHYL ACETATE.—12s. per lb.
- PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.
- RHODINOL.—32s. 6d. per lb.
- SAFROL.—1s. 6d. per lb.
- TERPINEOL.—1s. 8d. per lb.
- VANILLIN.—16s. 6d. per lb.

### Essential Oils

- ALMOND OIL.—Foreign S.P.A., 11s. per lb.
- ANISE OIL.—2s. 9d. per lb.
- BERGAMOT OIL.—26s. per lb.
- BOURBON GERANIUM OIL.—13s. 6d. per lb.
- CAMPOR OIL.—9d. per lb.
- CANANGA OIL, JAVA.—15s. 9d. per lb.
- CINNAMON OIL LEAF.—6d. per oz.
- CASSIA OIL, 80/85%.—7s. 3d. per lb.
- CITRONELLA OIL.—Java, 1s. 10d. per lb., c.i.f. U.K. port for shipment over 1928. Ceylon, pure, 1s. 8d. per lb.
- CLOVE OIL.—5s. per lb.
- EUCALYPTUS OIL, AUSTRALIAN.—2s. 2d. per lb.
- LAVERDER OIL.—Mont Blanc, 38/40%. Esters, 17s. per lb.
- LEMON OIL.—7s. 3d. per lb.
- LEMONGRASS OIL.—4s. 6d. per lb.
- ORANGE OIL, SWEET.—11s. 3d. per lb.
- OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.
- PALMA ROSA OIL.—10s. per lb.
- PEPPERMINT OIL.—Wayne County, 15s. 9d. per lb.; Japanese, 8s. per lb.
- PETITGRAIN OIL.—8s. per lb.
- SANDALWOOD OIL.—Mysore, 26s. 6d. per lb.; 90/95%, 16s. 6d. per lb.



## London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, November 24, 1927.

THE chemical market has been active and quite a fair volume of business has been transacted. Prices continue to be comparatively without change, but very firm. Export trade has been fairly satisfactory.

### General Chemicals

ACETONE.—No change is reported on this product and it stands at £63 per ton with a slight reduction for large quantities.

ACID ACETIC is unchanged at £37 to £38 per ton for 80%, business fair.

ACID CITRIC.—A moderate business is reported at about 1s. 7d. per lb., less 5%.

ACID FORMIC continues active and price is extremely firm at £44 to £45 per ton.

ACID LACTIC.—Unchanged at £53 per ton; demand fair.

ACID OXALIC.—Remains very firm and business is good at £30 per ton.

ALUMINA SULPHATE.—Market is maintained at the advanced level and price is firm at £5 15s. per ton, some substantial contracts have been booked for forward delivery.

AMMONIUM CHLORIDE.—Unchanged at £19 per ton; demand fair.

BARIUM CHLORIDE is active and price quoted is from £8 10s. to £9 per ton.

COPPER SULPHATE has been in active request and price is inclined to be higher at £23 5s. to £23 10s. per ton; forward inquiry good.

EPSOM SALTS firm and in good demand at £4 7s. 6d. per ton.

FORMALDEHYDE is active and price well maintained at £41 10s. per ton.

LEAD ACETATE.—Unchanged at £43 10s. for white and 10s. per ton less for brown.

LEAD NITRATE.—Firm and in good request at £40 per ton.

LIME ACETATE is inclined to be somewhat scarcer and supplies are obtainable at round about £16 per ton for 80% grey, and £10 per ton for brown.

METHYL ACETONE.—Active at £54 to £55 per ton, supplies are light.

POTASSIUM CHLORATE is firm and in short supply.

POTASSIUM PERMANGANATE is weak at round about 6d. to 10½d. per lb. for B.P.

POTASSIUM PRUSSATE is in fair demand at £59 per ton for bulk quantities.

SODIUM ACETATE is in shorter supply than ever and price is extremely firm at £19 15s. to £20 10s. per ton according to quantity and position.

SODIUM BICHROMATE is unchanged at 3½d. per lb.

SODIUM CHLORATE is also firm and the quotation is from £26 to £28 per ton, with a fair demand.

SODIUM NITRITE is firmer and price is now £19 to £19 15s. per ton; demand good.

SODIUM PRUSSATE is firm at 4½d. per lb.

SODIUM SULPHIDE is unchanged.

ZINC SULPHATE.—Moderate business is reported at £13 10s. to £14 per ton.

### Coal Tar Products

There is little change to report in the values of coal tar products from last week, the market remaining quiet.

90's BENZOL is unchanged, at about 1s. 4d. to 1s. 5d. per gallon on rails, while the motor quality is quoted at 1s. 1½d. to 1s. 2½d. per gallon.

PURE BENZOL is worth about 1s. 6½d. to 1s. 7d. per gallon, on rails.

CREOSOTE OIL is firm, and is quoted at about 7½d. per gallon on rails in the North, while the price in London is about 8½d. per gallon.

CRESYLIC ACID is unchanged, at about 2s. 2d. per gallon, ex works, for the pale quality, 97/99%, while the dark quality, 95/97%, is worth about 1s. 11d. per gallon.

SOLVENT NAPHTHA is quoted at about 10d. per gallon, on rails.

HEAVY NAPHTHA is unchanged, being worth about 11d. per gallon, on rails.

NAPHTHALENES are steady, at about £6 15s. to £7 per ton for the 74/76 quality, and at about £8 to £8 15s. per ton for the 76/78 quality.

PITCH.—The market is a little more animated, and prices have a somewhat firmer tendency. To-day's value is 85s. to 90s., f.o.b. U.K. port.

### Latest Oil Prices

LONDON.—November 23.—LINSEED OIL, steady. Spot, ex mill, £29 15s.; November, £28 10s.; December, £28 17s. 6d.; January-April, £29 12s. 6d.; May-August, £30 5s. RAPE OIL, steady. Crude, extracted, £44; technical, refined, £45, naked, ex wharf. COTTON OIL, firm. Refined common edible, £44; Egyptian crude, £38; deodorised, £46. TURPENTINE, quiet, and 3d. to 9d. lower. American, spot and December, 34s. 9d.; January-April, 36s. per cwt.

### Nitrogen Products

Export.—During the last week the sulphate of ammonia market has been quieter but prices are unchanged. It is understood that considerable sales have been made in continental countries and that producers will have no difficulty in raising their prices as the season advances.

Home.—Autumn has brought its usual sluggishness. Small sales are reported at scale prices, but at present there is very little interest in the commodity.

Nitrate of Soda.—Small sales continue to be made f.a.s. Chile on the basis of 16s. 9d. to 17s. 3d. per metric quintal, with slightly higher prices for near forward positions. It is expected that the demand will be sufficient to absorb the available supplies between now and March next.

### South Wales By-Products

SOUTH WALES by-product activities remain featureless. The demand for pitch is moderate and buyers seem to be holding out for a drop in prices, but the expectation does not look like materialising, for prices are given from 77s. 6d. to 82s. 6d. a ton. Crude naphthalene is unchanged at £4 10s. to £5 per ton, and has a quiet but fairly steady demand. Crude tar continues in quiet demand at 60s. to 65s. per ton. Refined tars, which have a quiet market, are unchanged, coke oven tar selling at 8½d. to 9d. a gallon, and gas-works tar at 7d. to 7½d. a gallon f.o.r. makers' works, and 10d. to 1s. delivered in barrels. Solvent naphtha has a fairly good demand at 10d. to 1s. 0½d. per gallon, f.o.r. makers' works. Patent fuel and coke exports have increased slightly, but the home demand has fallen slightly. Patent fuel exports during the four weeks ending November 15 from all the South Wales ports amounted to 75,786 tons, the majority of the tonnage being taken by Algeria,

France, Brazil, Spain, and Italy in that order. Patent fuel prices are unchanged at 23s. to 24s. 6d. per ton; coke (best foundry), 35s. to 37s. 6d.; other sorts, 27s. 6d. to 35s. Oil imports into Swansea during the four weeks ending November 15 amounted to 14,197,640 gallons.

### Belgium Chemical Trust Formed

A MERGER of Belgian chemical interests will shortly take place, forming a trust to be known as the Union Chimique Belge. The companies involved are the Société Générale Belge de Produits Chimiques, the Société de Produits Chimiques Drogenbosch, the Société de Produits Chimiques et Pharmaceutiques Meurice, and the Société de Fours de Coke Semetz Solvay et Piette. A meeting to confirm the arrangement will shortly be held under the presidency of M. Theunis. The president of the board of the trust will be M. Janssen, MM. Blaise and Piette being deputy directors.

### Gypsum Plant to be Established in Vancouver

VANCOUVER may be chosen for the location of a gypsum plant by a syndicate who are planning to develop a mountain of that mineral at Falkland, B.C. According to Mr. J. E. Mitchell, a member of the group, the gypsum will be mined by steam shovel and it is estimated that there are approximately 6,000,000 tons exposed. The proposed plant will have an annual output of about 50,000 tons of the raw and manufactured product. Kamloops, Hope and New Westminster are also under consideration as possible locations for the plant.

### Amalgamation of Czechoslovakian China Clay Producers

A FUSION of the China Clay works of Czechoslovakia, which are situated in the Carlsbad district, has taken place. The Zettlitz kaolin works, which recently absorbed the small Kaolin Co., have now acquired the entire share capital of the Kaolin Electro-Osmose Co., and of the Akeros Co. The new concern will thus control the whole of the output and sale of Czechoslovakian kaolin.

## Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, November 23, 1927.

THE past week has brought rather more inquiry to the heavy chemical market, and quite fair business has been done in some lines. Just before last issue a reduction of £4 per ton in the price of boric acid was made by manufacturers. Borax remains unchanged. Caustic soda prices are also likely to be reduced next year.

### Industrial Chemicals

ACETONE, B.G.S.—Quoted £59 to £62 per ton, ex store, according to quantity.

ACID ACETIC.—98/100%, glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80%, pure, £37 10s. per ton, ex wharf; 80%, technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton; powdered, £32 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Quoted 7½d. per lb., f.o.r. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Quoted price unchanged at 1s. 6½d. per lb., less 5%, ex wharf.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. 9d. per carboy. Dearsenicated quality, 5s. 3d. per carboy, ex works.

ACID NITRIC, 80°.—Quoted £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100°.—On offer from the Continent at 3½d. per lb., ex wharf. Spot material quoted 3½d. per lb., ex store. In better demand.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Still in little demand, but price unchanged at 1s. 2½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material quoted £5 12s. 6d. per ton, ex store. On offer for early delivery at £5 5s. per ton, c.i.f. U.K. ports.

ALUM POTASH.—Lump quality quoted £8 5s. per ton, c.i.f. U.K. ports. Crystal meal, 10s. per ton less. Lump quality on spot offered at £9 per ton, ex store.

AMMONIA, ANHYDROUS.—Unchanged at about 9d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture unchanged at £23 to £24 per ton, ex station. Continental on offer at £19 15s. per ton, c.i.f. U.K. ports. Fine white crystals quoted £17 10s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—In rather better demand, but price unchanged at £20 per ton, ex wharf, prompt despatch from mines. Spot material now quoted £21 per ton, ex store.

BARIUM CARBONATE, 98/100°.—English material on offer at £7 5s. per ton, ex station. Continental quoted £7 per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100°.—Large white crystals quoted £6 17s. 6d. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Contract price to consumers £8 per ton, ex station, minimum 4-ton lots. Spot material, 10s. per ton extra. Continental on offer at £7 5s. per ton, ex wharf.

BORAX.—English manufacturers' prices unchanged as follows:—Granulated, £19 10s. per ton; crystals, £20 per ton; powdered, £21 per ton. Odd parcels of granulated on offer from America at about £16 per ton, wharf.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 to £5 5s. per ton, ex station, with a slight reduction for contracts. Continental now on offer at £3 10s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or £4 12s. 6d. per ton, f.o.b. U.K. ports, for export.

COPPER SULPHATE.—Continental material quoted £23 per ton, c.i.f. U.K. ports. British on offer at £24 per ton, ex store.

FORMALDEHYDE, 40°.—On offer at £37 5s. per ton, c.i.f. U.K. ports. Spot material quoted £39 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at about £28 per ton, ex store.

LEAD, WHITE.—Quoted £28 10s. per ton, ex store.

LEAD ACETATE.—White crystals quoted £39 15s. per ton, c.i.f. U.K. ports; brown about £38 10s. per ton, c.i.f. U.K. ports. Spot material, white, on offer at £42 15s. per ton, ex store, spot delivery.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store in moderate demand.

POTASH CAUSTIC, 88/92°.—Solid quality, quoted £28 15s. per ton, c.i.f. U.K. ports, minimum 15-ton lots. Under 15-ton lots, £29 10s. per ton. Liquid, £15 per ton, minimum 15-ton lots. Under 15-ton lots, £15 7s. 6d. per ton, c.i.f. U.K. ports.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE, 96/98°.—Rather scarce for immediate delivery. Quoted £25 10s. per ton, ex wharf. Spot material about £26 10s. per ton, ex store.

POTASSIUM CHLORATE, 99/100°.—On offer from the Continent at £25 10s. per ton, c.i.f. U.K. ports for powdered quality; crystals, 30s. per ton extra.

POTASSIUM NITRATE.—Quoted £20 per ton, c.i.f. U.K. ports, spot material available at £21 per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 6½d. per lb., ex store, spot delivery.

POTASSIUM PRUSSIATE (YELLOW).—Unchanged at about 6½d. per lb., ex store, spot delivery. Offered from the Continent at 6½d. per lb., ex wharf.

SODA CAUSTIC.—Powdered, 98/99%, £19 7s. 6d. per ton; 76/77%, £15 10s. per ton; 70/72%, £14 10s. per ton, carriage paid station, minimum 4-ton lots on contract. Spot material, 10s. per ton extra.

SODIUM ACETATE.—In good demand and still scarce for prompt delivery. Quoted £18 5s. per ton, c.i.f. U.K. ports. British material, quoted £22 per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3½d. per lb., delivered buyer's works.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, 27s. 6d. per ton extra; alkali, 58%, £8 10s. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture, quoted £9 10s. per ton, ex store, minimum 4-ton lots. Continental on offer at about £8 2s. 6d. per ton, ex wharf, prompt shipment. Pea crystals of British manufacture quoted £15 5s. per ton, ex station, 4-ton lots.

SODIUM NITRITE, 100°.—Quoted £19 10s. per ton, ex store.

SODIUM PRUSSIATE (YELLOW).—In moderate demand and price unchanged at about 4½d. per lb., ex store. Offered for prompt shipment from the Continent at 4½d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption, £3 7s. 6d. per ton, ex works.

SODIUM SULPHIDE.—Prices for English material as follows:—60/62% solid, £10 10s. per ton; broken, £11 10s. per ton; flakes, £13 5s. per ton; crystals, 31/34%, £7 10s. per ton to £8 5s. per ton, according to quality, delivered your works, minimum 4-ton lots on contract. Prices for spot delivery, 5s. per ton higher for solid, 2s. 6d. per ton for crystals. Offered from the Continent at about £9 5s. per ton, c.i.f. U.K. ports; broken, 15s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 15s. per ton; rock, £10 12s. 6d. per ton; floristella, £9 10s. per ton; ground American, £9 5s. per ton, ex store. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid, on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports. Powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material quoted £11 15s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

### Intermediates

PARANITRANILINE.—1s. 7½d. per lb. Some inquiries.

ANTHRANILIC ACID.—5s. 9d. per lb. Some inquiries.

SULPHANILIC ACID.—8½d. per lb. Some inquiries.

BENZOIC ACID.—1s. 9d. per lb. Some inquiries.

BETA NAPHTHOL.—10d. per lb. Some inquiries.

### China Clay Works for Sale

THE works of the Great Rosemellyn China Clays, Ltd., of Roche, near St. Austell, Cornwall (in voluntary liquidation), are being offered for sale by public tender as a going concern, together with the licence and authority to carry on the business of China Clay pit owners and merchants. Information and forms of tender may be obtained from Mr. A. G. Watkins, auctioneer, Exchange Buildings, St. Austell, and sealed tenders must be delivered at his office on or before 2.30 p.m. on Wednesday, December 7.

## Manchester Chemical Market

(FROM OUR OWN CORRESPONDENT.)

Manchester, November 24, 1927.

BUYING interest in chemical products on the Manchester market since last report, can, at the best, be described as moderate, and in most cases, users have shown a marked disposition to limit their commitments as far as possible, quantities being small and delivery dates near at hand. On export account, also, inquiry during the past week has been rather slow, particularly for shipment to the Continent. Generally speaking, however, values keep steady all round.

### Heavy Chemicals

Makers' offers of bicarbonate of soda are still at round £10 10s. per ton, and a quiet trade is being put through. The demand for sulphide of sodium remains on a limited scale, and there is still a certain amount of easiness in evidence as regards prices, the 60-65 per cent. concentrated solid material being quoted at about £9 12s. 6d. per ton, and the commercial quality at £8 5s. to £8 10s. per ton. Caustic soda continues firm but unchanged on the week at from £14 10s. to £16 10s. per ton, according to quality, and a fair demand is reported. In the case of hyposulphite of soda values are pretty much as they were at last report, and the call is still restricted, with photographic at up to £16 10s. per ton, and commercial at £9 10s. Nitrite of soda keeps very steady at about £19 2s. 6d. per ton, and a fair amount of buying interest is being shown in this material. Current offers of chlorate of soda are in the neighbourhood of 2½d. per lb., but there is still no important feature about the demand. Bichromate of soda meets with some inquiry, and values are held at round 3d. per lb. Saltcake is moving off in moderate quantities at £3 10s. per ton, or thereabouts. Alkali keeps firm and is in quietly steady demand at £6 15s. per ton. For prussiate of soda inquiry is not particularly active, but quotations for this material are still at about 4½d. per lb. Glauber salts are quiet at from £3 2s. 6d. to £3 7s. 6d. per ton. Phosphate of soda is still obtainable at round £12 15s. per ton, but business in this section remains on moderate lines.

There is a fair amount of activity both in caustic potash and carbonate of potash, and in each case values are pretty well held, caustic being on offer at £29 10s. to £31 per ton, according to quality, and carbonate at about £26 7s. 6d. An average quotation for chlorate of potash to-day is 2½d. per lb.; so far as demand is concerned, there is no disposition to place orders freely. In spite of a limited inquiry for permanganate of potash values are pretty well maintained, with B.P. material quoted at 6½d. to 6½d. per lb., and commercial at 5½d. Bichromate of potash keeps steady at about 4½d. per lb., and a moderate business is being transacted. Yellow prussiate of potash is in quiet request at up to 6½d. per lb.

The demand for sulphate of copper for shipment has been rather slow this week, and there is a certain amount of easiness about prices, these ranging from £24 to £24 5s. per ton, f.o.b. Offers of arsenic are perhaps not quite so scarce as they have been of late, and parcels could now be bought on the basis of £17 15s. per ton at the mines for white powdered, Cornish makes. There is nothing much stirring in the case of nitrate of lead, which remains at £38 per ton, or a trifle less than this figure. The lead acetates, also, are on the slow side, with white on offer at £40 to £41 per ton and brown at £38 15s. There are still only small quantities of acetate of lime obtainable for early delivery, and prices are firm at up to £16 15s. per ton for grey, and about £10 10s. for brown.

### Acids and Tar Products

Although sales of citric acid are of limited extent at the moment, prices are firm at about 1s. 6½d. per lb. Tartaric acid, however, is still on the easy side at 1s. 2½d. per lb., and the demand is poor. Oxalic acid is steady, and in moderate request at about 3½d. per lb. Acetic acid is fully maintained at £37 per ton for the 80 per cent. commercial, and £66 10s. per ton for the glacial.

Pitch is still a firm section of the tar products market at round £4 7s. 6d. per ton, f.o.b. Creosote oil also is very firm and continues to meet with a steady inquiry; to-day's quotations are round 7½d. per lb. Solvent naphtha is quiet but unchanged at 11½d. per gallon, whilst carbolic acid is again easier at 7½d. per lb. for crystals, and 2s. 4d. per gallon for crude.

### A Disintegrating and Emulsifying Mill

A NEW catalogue relating to the "Premier" disintegrating and emulsifying mill has been published by the makers of the latter, Burt, Boulton and Haywood, Ltd., of Prince Regents Wharf, Silvertown, London. The mill consists of an outer casing which surrounds a rotor, usually consisting of a perfectly smooth metal cone, which is made with great accuracy and fixed to a spindle mounted in special ball bearings. The cone works in close relation to a fixed surface which forms part of the casing. In its simplest type, therefore, the mill has a cone working in close proximity to a conical seating and almost touching it. The working surface of the rotor is arranged so that there is a very fine clearance between it and the surface of the casing. In operation the apparatus is a metal surface rotating in very close proximity to a fixed surface at a speed which may vary from 5,000 feet per minute, or less, to 25,000 feet per minute, or more, the material to be dealt with passing through the narrow space between the conical surfaces in a thin film. The mill is made in a number of types, and may be used for the emulsification of liquids and solids (or their intensive mixing); the minute disintegration of soft solids suspended in liquids, the manufacture of paints, enamels, and printing inks from soft pigments, the wet grinding of organic chemicals, dyestuffs, and for many other purposes.

### Petrol Gas for Laboratory Work

WHAT is claimed to be a perfect substitute for coal gas in works, school and research laboratories, is provided by the "Aerogen" system of petrol-air safety gas generation. The petrol feed and carburetting are carried out by a weight control or electric drive, but the plant is controlled under various loads by an ingenious use of vacuum. The gas produced, 95 per cent. air and 5 per cent. petrol, is claimed to produce with Bunsens and other special burners, a flame identical with ordinary gas flames and of equal temperature. The gas is non-explosive, and can only be ignited through the proper burners. It is particularly recommended for glass blowing, as blurring can be obviated. The makers of the equipment are the Aerogen Co., Ltd., 36, Bolsover Street, London, S.W.1, who are the sole licensees in this country of the "Kiesselbach" high-pressure thermal storage system for boiler plant.

### Acid Resisting Pumps for Chemical Industry

A NEW catalogue has been issued by Haughton's Patent Metallic Packing Co., Ltd., 30, St. Mary-at-Hill, London, E.C.3, which, dealing with acid pumps, will be of interest to those interested in the chemical, metallurgical, artificial silk, oil refining, and allied industries. The chemical department of this firm has made a special study of the requirements of the acid pump user and are thus in a position to supply pumps for practically any purpose. The list deals with pumps for use with all acids in commercial use, for those to be used in pumping alkalis. The high lift pump for pumping acid for Glover and Gay Lussac towers lifts up to 200 ft., and is constructed in regulus metal. A similar pump in tantiron is supplied in one unit with a motor drive. The range is extensive and well worth consideration.

### The Sulzer Technical Review

A COPY of the *Sulzer Technical Review* has been forwarded by Sulzer Brothers, of Bedford Square, London. Finely printed on art paper and fully illustrated with photos and diagrams, the booklet contains details of various high pressure plants and machinery installed by the firm. Included in these are descriptions of a 1,500 h.p. Sulzer uniflow steam engine with oil-operated valve gear in the steamer *Helvétie*, built for the Cie Générale de Navigation sur le lac Léman, and full details of the pipe line for the Vernayaz and Ilsee Turtmann hydro-electric power stations in Switzerland. Details are also given of various pumping plants, Diesel engines, refrigerators, and gas compressors installed by the company in various parts of the world. The review is bound in a stout pile cover, sufficient to contain the publications of several years.



## Company News

**CHLORIDE ELECTRICAL STORAGE CO.**—The company announce an interim dividend of 5 per cent.

**ANGELA NITRATE CO.**—The directors have declared an interim dividend of 5 per cent. or 1s. per share, less income tax, payable on December 5.

**"SHELL" TRANSPORT AND TRADING CO., LTD.**—An interim dividend of 2s. per share, free of income-tax, is announced, payable on January 5, 1928.

**ILFORD, LTD.**—After making allowance for depreciation and provision for doubtful debts, etc., the net profit for the year ended October 31, 1927, is £76,473, the highest yet earned. This amount, with £7,649 brought forward, gives £84,122 for appropriation. The directors have written £5,000 off goodwill and transferred £12,000 to reserve fund, and recommend that a dividend of 12½ per cent. be paid on the ordinary shares for the year, leaving £9,222 to be carried forward.

**HENRY BESSEMER AND CO.**—It is announced that the directors propose to reduce the ordinary capital by writing off 13s. 4d. per £1 share. This will provide £155,667, which, with £5,287 from reserves, will suffice to wipe off the debt balance on profit and loss account and to reduce the book value of the works from £267,408 to £171,128. The ordinary shares of 6s. 8d. each resulting from the reduction will carry the right to all profits remaining after payment of the 5 per cent. non-cumulative preference dividend.

**TATE AND LYLE, LTD.**—After placing £100,000 to general reserve and leaving the dividend reserve untouched, the directors proposed to recommend at the annual general meeting to be held on December 8, a final dividend on the ordinary shares of 4 per cent., subject to deduction of income-tax, which, with the interim dividend of 4 per cent. paid in June last, makes a total for the year of 8 per cent., subject to deduction of income-tax, and to carry forward £45,223 to next year. Last year the total dividend on the ordinary was 6 per cent., when £100,000 was placed to general reserve and £90,000 to dividend reserve, £52,018 being carried forward.

**LANGDALE'S CHEMICAL MANURE CO.**—The report for the year ended September 30, 1927, states that the profit was £54, to which is added the balance brought forward of £371, making a total to be carried forward of £425. Dislocation of trade and rise in freights, consequent upon stoppage in coal trade, have, it is stated, adversely affected the results of the year's working. Foreign competition is unabated, and the company's export trade has been thereby seriously jeopardised. The volume of home trade has been maintained in spite of adverse weather conditions in the spring, but at lower prices. The annual meeting will be held at Newcastle-on-Tyne, on November 26, at 12 noon.

**LIVERPOOL NITRATE CO.**—For the year ended June 30 last the report states that the balance of profit and loss from the previous account was £20,541. After deducting the loss for the past year of £5,961, there remained a balance of £14,580, which the directors propose to carry forward. Owing to the extraordinary conditions which have prevailed in the nitrate industry, the manufacture of nitrate, which, as announced in last year's report, was suspended at Oficina Mapocho at the end of June, and at Oficinas Ramirez and San Donato in October, 1926, has not yet been resumed. As position has recently improved it is hoped to commence operations at Mapocho in December and Ramirez in February. The annual meeting will be held in Liverpool on December 1, at 12 noon.

## Tariff Changes

**BELGIUM.**—The requirement for a licence for the import into Belgium of colour with a base of aniline was withdrawn on November 1.

**POLAND.**—By virtue of a recent order the import duty paid on raw materials used in the manufacture of artificial dyestuffs which are exported from Poland will be partially refunded.

**UNITED STATES.**—The import duty on phenol has been reduced from 40 per cent. *ad valorem*, plus 7 cents per lb., to 20 per cent. *ad valorem*, plus 3½ cents per lb.

## New Chemical Trade Marks

### Applications for Registration

*This list has been specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.*

*Opposition to the Registration of the following Trade Marks can be lodged up to December 9, 1927.*

#### ALULAK.

481,707. Class 1. Chemical substances used in manufactures, photography, or philosophical research, and anti-corrosives, but not including red oxides of aluminium or fluxes or other products for soldering, brazing, and welding, and not including any goods of a like kind to any of these excluded goods. Reckitt and Sons, Ltd., Kingston Starch Works, Dansom Lane, Hull, Yorkshire; manufacturers. June 20, 1927.

*Opposition to the Registration of the following Trade Marks can be lodged up to December 16, 1927:*

#### MENTEX.

483,025. Class 1. Chemical substances. The Paisley Oil and Chemical Co., Ltd., Trading Estate, Slough, Buckinghamshire; merchants and manufacturers. August 6, 1927.

#### CRETEX.

483,026. Class 1. Chemical substances. The Paisley Oil and Chemical Co., Ltd., Trading Estate, Slough, Buckinghamshire; merchants and manufacturers. August 6, 1927.

#### PRESOTIM.

484,745. Class 1. Wood preservatives. The Powell Duffryn Steam Coal Co., Ltd., 101, Leadenhall Street, London, E.C.3; colliery proprietors. October 8, 1927.

#### ORION.

482,047. Class 2. Fertilisers. Synthetic Ammonia and Nitrates, Ltd., The Chemical Works, Billingham, Stockton-on-Tees; chemical manufacturers. June 30, 1927. (To be Associated. Sect. 24.)

#### TELLUS.

482,050. Class 2. Fertilisers. Synthetic Ammonia and Nitrates, Ltd., The Chemical Works, Billingham, Stockton-on-Tees; chemical manufacturers. June 30, 1927. (To be Associated. Sect. 24.)

## Chemical Trade Inquiries

*The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.*

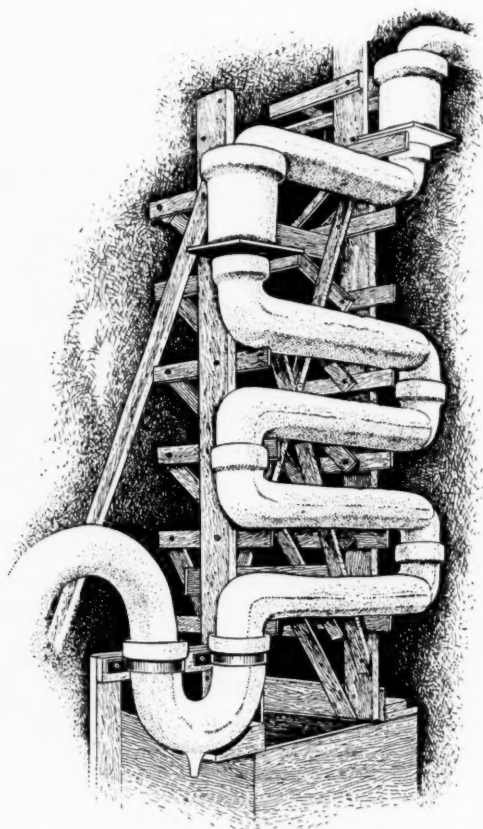
**CELLULOSE ENAMELS.**—A French firm in Paris desires to secure the agency of United Kingdom manufacturers. Reference No. 431.)

**ALIMENTARY VEGETABLE OILS.**—A commission agent established in Rome, desires to represent British producers of refined and unrefined vegetable oils and also their by-products for use in soap-making. (Reference No. 440.)

## Chemical Society Meeting

An ordinary scientific meeting of the Chemical Society of London will be held on Thursday, December 1, at 8 p.m., at Burlington House, Piccadilly. The following papers will be read:—"Action of Beckmann's Chromic Acid Mixture on some Monocyclic Terpenes," by T. A. Henry and H. Paget; "The Condensation of Glyoxalines with Formaldehyde," by R. Grindley and F. L. Pyman; "Glyoxaline-4(5)-formaldehyde," by W. Hubball and F. L. Pyman; "Studies of Dynamic Isomerism, Part XXVI, Consecutive Changes in the Mutarotation of Galactose," by G. F. Smith and T. M. Lowry; "Triazole Compounds, Part II, Methylation of some 1-hydroxy-1:2:3-benzotriazoles," by O. L. Brady and C. V. Reynolds; and "The Reaction between Diaryloxy-isopropyl Alcohols and Phosphorus Oxychloride in the Presence of Pyridine," by D. R. Boyd and D. E. Ladham.

# The "VITREOSIL"



COLUMN OF "VITREOSIL" ABSORPTION VESSELS.

## System of HYDROCHLORIC ACID ABSORPTION

THESE VESSELS set up Vertically one above the other can be thoroughly Water Cooled.

Economies of Floor Space and Efficiency of Operation are secured. There are no submerged joints.

In this System an intimate contact of the gas with the liquid is secured by means of the liquid curtain formed by the drops falling from the central depression and through which all the gas must pass.

**Let us know your Problems**

WRITE FOR DESCRIPTIVE LITERATURE  
*Specialists in Chemical Works Plant*

SOLE MANUFACTURERS

**THE THERMAL SYNDICATE, Ltd.**

VITREOSIL WORKS

WALLSEND-ON-TYNE, ENGLAND  
LONDON DEPOT: 28 Victoria Street, S.W.1

Telephone Nos. 42 & 43 Wallsend.

AND AT NEW YORK and PARIS

Telegrams: "Thermal, Wallsend"  
ABC Code, 5th & 6th Editions, & Bentley's used

## Commercial Intelligence

*The following are taken from printed reports, but we cannot be responsible for any errors that may occur.*

### County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

BRAID (A. E.) AND CO., LTD., 30, Gower Place, Bloomsbury, W.C., wholesale druggists. (C.C. 26/11/27.) £20 11s. 5d. October 10.

### Receiverships

DAVIES, SONS AND CO. (DERBY), LTD. A. G. Mellors, of 1, King John's Chambers, Bridlesmith Gate, Nottingham, ceased to act as Receiver or Manager on November 15, 1927.

PHILLI-MIRANO (1926), LTD. (R., 26/11/27.) D. B. Drake, C.A., of 11A, Hart Street, Bloomsbury, W.C.1, was appointed Receiver and Manager by Order of Court dated November 7, 1927.

### Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an \*—followed by the date of the Summary, but such total may have been reduced.]

ALLIANCE (MANCHESTER) LTD., chemical dealers, etc. (M.S. 26/11/27.) Registered November 11, debenture to Bank; general charge. \*Nil. March 25, 1927.

### Satisfaction

PREMIER DYEING AND FINISHING CO., LTD., Leek. (M.S. 26/11/27.) Satisfaction registered November 15, £300, part of amounts registered August 4, 1922, and February 13, 1924.

### London Gazette, &c.

#### Company Winding Up

CORBYN STACEY AND CO., LTD. Meetings of creditors, November 30, 11.30 a.m., and contributories, November 30, 12.15 p.m., Bankruptcy Buildings, Carey-Street, Lincoln's Inn, London, W.C.2.

#### Company Winding Up Voluntarily

SMITH (HENRY J.) (CHEMISTS), LTD. (C.W.U.V., 26/11/27.) E. C. Myring, Incorporated Accountant, 742, Salisbury House, London Wall, London, E.C.2, appointed as liquidator, November 16.

### New Companies Registered

THE ANGLO-CHILEAN NITRATE CO., LTD., Cory Buildings, Fenchurch Street, London, E.C.3. Registered as a "private" company on November 18. Nom. capital, £10,000 in £1 shares. Manufacturers, importers and exporters of and dealers in all kinds of chemicals and chemical products, fertilisers and fertilising products, etc.

BRICK, LIME AND FERTILISERS, LTD., 1, Queen Victoria Street, London, E.C.4. Registered as a "private" company on November 17. Nom. capital, £5,000 in 1s. shares. To adopt three agreements (1) with H. M. Davy, (2) with J. W. Landon, and (3) with C. H. Thompson, and to carry on the business of manufacturers, importers and exporters of and dealers in pure lime, hydrate of lime, chemical and other manures and fertilisers and chemicals of all kinds,

lime burners, manufacturing chemists, manufacturers of bricks, tiles, pipes, etc. Directors: Sir Edward L. Fletcher, Sir Cecil T. Beck, J.P., N. Malcolmson, O.B.E., O. J. Buxton, C. de L. Hewitt, Dr. C. H. Thompson, J. W. Landon.

BROOKS (MISTLEY), LTD., The Maltings, Mistley, Essex. Registered as a "private" company on November 16. Nom. capital, £150,000 in £1 shares (70,000 7 per cent. cumulative preference and 80,000 ordinary). To acquire the business of W. H. Brooks and Son as heretofore carried on at Mistley, Essex, and to carry on the business of maltsters, seed crushers, and manufacturers of linseed, cotton and other cakes, oil extractors by crushing, chemical or other process, cake and oil manufacturers, oil refiners, soap boilers, manufacturers or importers of cattle food and feeding and fattening preparations, artificial manures and fertilisers of all kinds, etc. Directors: W. H. H. Brooks, C. A. Brooks, F. V. Crisp.

CONTINUOUS COAL CARBONISATION, LTD. Registered November 18. Nom. capital, £100 in 95 "A" shares of £1 each and 100 "B" shares of 1s. each. Distillers, extractors, producers, manufacturers and suppliers of all solid, liquid and gaseous substances or matter in any manner derived from coal or from the derivatives of or residuals obtained from coal by combustion, evaporation, distillation or decomposition, or by any other means or process, whether physical, mechanical or chemical, etc. A subscriber: W. J. Yeoman, 244, Lordship Lane, East Dulwich, London, S.E.22.

S. E. DAWSON AND CO., LTD. Registered November 17. Nom. capital, £10,000 in £1 shares. Steel, iron and brass founders, chemists, metallurgists, etc. Directors: S. E. Dawson, 8, Lynton Park Road, Cheadle Hulme, Cheshire; C. Y. Burton, W. Wellens.

SIDNEY R. LITTLEJOHN AND CO., LTD., 30, St. Bride Street, London, E.C.4. Registered November 16. Nom. capital, £5,000 in £1 shares. Manufacturers of inks, colours and chemicals, analytical, wholesale and retail chemists, manufacturers of and dealers in chemical preparations and machinery, apparatus, etc. Directors: S. R. Littlejohn, H. Herron.

MORETON AND SON, LTD. Registered November 19. Nom. capital, £300 in 1s. shares. Pharmaceutical and dispensing chemists and drysalters, wholesale, retail and manufacturing chemists. Directors: J. Tatum, 39, Greame Street, Alexandra Road, Manchester, and Hannah Tatum.

WRIGHT PRODUCTION CO., LTD., Bank Chambers, Ambleside. Registered November 21. Nom. capital, £1,000 in 1s. shares (5,000 10 per cent. participating preference and 15,000 ordinary). Marine locomotive and general engineers, manufacturers of and dealers in liquid fuel burners, metallurgists and chemists, manufacturers of and dealers in ores, metals, chemical and other products, carbon black and vegetable black producers, etc. Directors: D. N. Wright, W. H. Butler and H. Gregory.

### Benn Brothers' Other Journals

THE CABINET MAKER.—Future of the Furniture Trade; Wood-working Machinery Notes; Road and Rail Transport—A Comparison.

THE ELECTRICIAN.—Iron and Steel Number: "High Frequency Induction Melting," by D. F. Campbell; Electrical Equipment of Plate Mills; Electric Drive for Iron and Steel Manufactures; Institute of Fuel: Papers Read at London Meeting.

THE FRUIT GROWER.—Merchandise Marks and Fruit; Motor Transport Exhibition; Oranges from Brazil.

GARDENING ILLUSTRATED.—Winter Spraying of Fruit Trees with Tar-Oil Wash; "The Grey Garden," by Gertrude Jekyll V.M.H.; November Flowers at Vincent Square; How to Force Seakale.

THE GAS WORLD.—The "Public Lighting of Greater London"; Meeting of the Institute of Fuel; The Development of the Gas-holder.

THE HARDWARE TRADE JOURNAL.—Motor Transport in the Hardware Trade; Merchandise Marks; The Question of Imported Lawn-mowers; Cutlery and Plate; Points to Watch in Buying Stainless Cutlery.

THE TIMBER TRADES JOURNAL.—Sensational Latvian Auctions—Sweden and the Waiting Policy; Bosnian Timber Industry; Our "Woodworkers' Parliament."



